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An Address
ON
HÆMORRHAGE IN PREGNANCY*

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HÆMORRHAGE occurring at any period of pregnancy should never be lightly dismissed. Its cause and origin should be determined. Without jeopardizing the pregnancy or adding to the risk of infection the investigation should be thorough. The history before and since pregnancy began, the character of the hæmorrhage and circumstances under which it commenced, will tell much if full use is made of it.

Severe hæmorrhages are more likely to be met with in advanced pregnancy and will be discussed later. Mention only will be made of the rarer causes, namely, the doubtful possibility of menstruation, cervical polypus, malignant disease of the cervix, ruptured varices and injuries to the lower genital tract. Extra-uterine pregnancy, particularly in the early months, must ever be kept in mind.

Abortion

By far the most common cause of hæmorrhage in pregnancy is abortion. Three features, only, of this much too frequent complication of pregnancy will be considered. Early prenatal advice, without doubt, would eliminate many abortions initiated by acts done in ignorance.

Those who practice in a city or hospital town might well be less hasty in considering that a threatened abortion has become inevitable. It is amazing the amount of blood that can be lost and still with appropriate treatment the pregnancy continue to term. In rural districts inevitable abortion must of necessity encroach upon what in town might still be considered only threatened abortion. Unless rhythmic pains are present the amount of blood lost in threatened abortion during the first ten weeks of pregnancy seldom calls for active interference. Whether we believe or not in the so-called conservative or radical treatment, do not let us burn our bridges by frequent careless vaginal examinations. By rectal examination the condition of the cervix, and the presence of intra- or extra-uterine pregnancy can usually be determined. Vaginal manipulations should be judicious.

Accidental Hæmorrhage

Accidental hæmorrhage or premature separation of a normally implanted placenta usually occurs in the latter half of pregnancy. The hæmorrhage may be concealed or external. This in its severe form is one of the gravest complications of pregnancy. Fortunately its incidence is low; the percentage would appear to increase in direct ratio to the age and multiparity of the patient. Close observation of placentæ will frequently reveal small areas

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XUM

where separation has taken place without signs or symptoms. Much controversy has arisen in regard to the cause of this condition. Most authorities are agreed that accidental hæmorrhage is frequently associated with toxæmia.

Frey and Armbuster[1] assume that there is a functional disturbance in the utero-placental circulatory system, and that any disorder affecting the blood vessels of this area must be considered at least a predisposing factor. Morse[2] believes the cause to be torsion of the uterus. Welz[3] thinks few are due to trauma but when it is, the type is not as severe as that due to toxicosis. The report by F. J. Browne[4] of his experimental investigation upon pregnant rabbits is of extreme interest. He produced a chronic oxalate nephritis in rabbits, later mated them and in the latter part of pregnancy produced an acute or subacute exacerbation of the nephritis by the injection of oxalate and certain organisms. This exacerbation produced in the pregnant rabbits accidental hæmorrhage, internal and external, together with placental infarction and hæmorrhage in the uterine musculature, a clinical and pathological picture identical with that found in the more severe type of accidental hæmorrhage in women. The same result was obtained in all cases so treated. He does not believe the organisms lead directly to the hæmorrhage but to an exacerbation of the nephritis, and that the hæmorrhage is caused by endogenous poisons held up in the circulation by the acutely damaged kidney. FitzGibbon[5] considers that *ante partum* accidental hæmorrhage is the culmination of a slowly developed condition of the uterus due to chronic nephritis.

All are agreed that trauma does occasionally cause premature separation of the placenta, but seldom if ever the local pathological picture found in the severe type of accidental hæmorrhage. From the frequent association, as reported by many of the large clinics, of this condition with recognizable kidney damage it must be concluded that the most common predisposing factors are nephritis and toxæmia.

The hæmorrhage in separation of the placenta takes place under the decidua basalis and may extend in any direction, stripping the membranes off as it increases, becoming external if the internal os is reached. The blood may encroach upon the cavity of the ovum or bulge out the uterine wall. In the severe type sometimes called uteroplacental apoplexy, the outer portion of the uterine muscle wall may be disintegrated. Some one has described it as "ploughed up". The muscle fibres are separated by blood, the blood vessels are disorganized, their walls showing endarterial changes. The serosa may show cracks or slits through which blood has escaped into the peritoneal cavity. Although entirely concealed hæmorrhage is rare, when slight bleeding occurs during the last trimester, premature separation of the placenta must be kept in mind.

The characteristic clinical picture found in the moderate or severe type of accidental hæmorrhage is a pale, distressed patient complaining of abdominal pain; examination reveals her to be in a state of shock; the uterus is found enlarged, tender and boardlike; no fœtal parts can be made out; the fœtal heart sounds cannot be heard, and a bright, dark, or serous bloody vaginal discharge is present. The absence of the placenta in the lower segment as revealed by vaginal examination usually confirms the diagnosis. Placenta prævia, rupture of the uterus, extra-uterine pregnancy and other acute abdominal conditions should be eliminated by the foregoing.

Treatment.—The conditions under which treatment has to be carried out, will influence, to a certain extent, the procedure. Only in the severe type should treatment differ except in detail, whether in the country or city. The very severe type is much in the minority. Slight bleeding may occur during active labour and little interference is called for except early rupture of the membranes and elimination of the second stage, if the child shows signs of distress.

Moderate cases present the symptoms described previously. The attendant's aim should be to combat shock, empty the uterus, and stop hæmorrhage before and after delivery. Blood transfusion is indicated; if blood is not available, substitute fluids intravenously and subcutaneously. Morphine in doses to suit the patient and her condition should be given. The condition of the cervix may interfere with the procedure of emptying the uterus but seldom in the elderly multipara will it happen that one or two fingers cannot enter the cervical canal and rupture the membranes; after which a tight abdominal binder should be properly

applied. At this stage some conservative obstetricians advocate the use of small doses, repeated if necessary, of pituitrin and ergot to stimulate uterine contractions. Larger doses may be used after delivery to overcome the much discussed "uterine atony" supposedly due to disintegration of the uterine musculature. It is felt, however, that if the uterus can expel the fœtus, "uterine atony" is not present in that sense, but rather in the sense used in the case of any other exsanguinated patient. Rapid dilatation of the cervix must be condemned. No procedure in obstetrics is more likely to increase an already existing condition of shock. Shock in these patients it must be remembered is very often out of all proportion to the amount of blood lost. Version is mentioned only to be condemned. Vaginal tamponade or the hydrostatic bag will accomplish little or nothing in accidental hæmorrhage. If uterine contractions cannot be initiated, if the anæmia increases, and if the blood pressure continues to go down Cæsarean section with or without hysterectomy may become imperative. A transfusion whenever possible should be given before abdominal delivery is attempted.

For the severe case in which marked disintegration of the uterine muscle is anticipated, or where the cervix is found to be firm, Cæsarean section following transfusion would appear to be the only rational treatment.

The maternal mortality ranges from 3 to 15 per cent, most of the deaths occurring in the severe utero-placental apoplectic type. The fœtal mortality regardless of the method of treatment is always high.

Placenta Prævia

When the placenta is situated on the lower uterine segment the condition is known as placenta prævia. Hæmorrhage occurs when the site of implantation in the lower segment is stretched, and is known as unavoidable. The placenta may be so inserted as to completely or partially cover the internal os. The terms most frequently used to designate the exact relation of the placenta to the internal os are: central, lateral and marginal. The last two terms are confusing and very seldom is the placenta inserted with its centre directly over the internal os. It is felt the terms, complete, incomplete and low implantation better portray the situation of the placenta and certainly from a clinical standpoint better subdivide the condition for treatment.

The cause of implantation of the placenta in the lower uterine segment is not known. It would appear that multiparity, particularly when pregnancies occur in rapid succession, endometritis and subinvolution must play a great part in the inability of the fertilized ovum to become attached in the upper portion of the uterine cavity.

A painless hæmorrhage, profuse or slight, without apparent cause, occurring in the last three months of pregnancy, is the most outstanding and significant symptom of placenta prævia. The more complete the placenta prævia the earlier is hæmorrhage likely to occur. In low implantation and incomplete types the first stage of labour may be reached before signs of separation occur. Exceptions of course to this general rule occur. Hæmorrhage for the most part comes from the maternal blood vessels in the lower segment; its severity does not always mean that the internal os has been encroached upon. Malpresentations and non-engagement of the presenting part are frequently met with in these cases.

Hæmorrhage in the last three months of pregnancy demands that a diagnosis be made; vaginal examination is the only means by which this can be made positive. A word of warning here: manipulations even of the gentlest within the cervix in a case of placenta prævia may cause a furious hæmorrhage. The patient should be prepared as for delivery, and the very strictest aseptic precautions should be observed before any vaginal examination is undertaken. In placenta prævia the cervix is soft, usually admitting at least one finger, so that the placenta and its degree of encroachment can be recognized; the fact that it intervenes between the examining finger and the presenting part can be determined through the cervix and not infrequently through the fornices.

When one takes note of the mortality for both mother and child in cases of placenta prævia one is able to realize the formidable possibilities of this condition. Either alone or in combination, hæmorrhage, sepsis and injuries to the lower uterine segment are the usual causes of death of the mother, while asphyxia and prematurity account for most of the fœtal

deaths. All too frequently mothers are lost in an endeavour quickly to deliver premature infants—a short-sighted policy surely, when one considers for a moment the early death of the great majority of these children.

Treatment.—So many factors must be considered that it is impossible to lay down hard and fast rules to be followed in the treatment of placenta prævia. Age, parity, period of gestation, amount of cervical dilatation, presence or absence of uterine contractions, position of placental insertion, condition of mother and child, surroundings and the experience of the physician, all deserve consideration. In view of the several causes inducing maternal death the termination of pregnancy by methods most likely to cause the least possible loss of blood, the least chance of sepsis and a minimum of trauma is the objective to be attained.

The first hæmorrhage may be severe, but as a rule is not fatal. If a hospital is within reach, no patient upon whom even a tentative diagnosis of placenta prævia has been made should be treated in the home. Only in a well equipped hospital can such a patient receive efficient modern treatment. In the country and outlying districts the best will have to be made of a bad situation. In this plight, patience, resourcefulness and a definite leaning towards conservative methods will be the greatest assets the physician can possess.

Once the diagnosis has been made waiting carries a heavy responsibility with it. A second hæmorrhage may be the last. Every ounce of blood lost *ante partum,* may be enough to turn the scale during or after delivery. Each case should be seen early, studied independently and if possible relegated to a certain method of treatment. Due consideration of the condition of the patient, previous interference, situation of the placenta, period of gestation, state of the cervix and parity, in order named, will, as a rule place the case in one of two groups: one best treated by conservative methods, the other by so-called, radical methods. Survival of the baby should be considered most certainly, but should not receive too much weight if much risk is to be added to the mother already in a precarious condition. A suitable donor should whenever possible be held in readiness for use before, during or after delivery.

In mild cases with the head engaged or ready to engage, the patient in labour and with slight hæmorrhage little interference is required. Simple rupture of the membranes, and a properly applied abdominal binder will prevent further separation and bleeding. If the physician has patience and a due regard for the physiology of labour, a happy termination for mother and child is the rule. To stimulate the uterus unduly would be unwise. Think of the placental site as thick wet blotting paper, and then think of what too rapid dilatation or rough manipulation would do to it. Like Kellogg[6] I believe not a few deaths are due to longitudinal tears or slits in the lower segment opening up the large sinuses and sometimes amounting to rupture.

Vaginal Tamponade has been used a great deal in the past, to stop hæmorrhage, to initiate labour pains and to increase dilatation. The increased risk of sepsis for vaginal delivery involving intra-uterine manipulations, and the almost prohibitive risk for later Cæsarean section, are the great drawbacks to the use of this procedure. Its use should be limited to emergencies, to stop severe hæmorrhage and as a substitute when other methods are impossible.

Version as a method of treatment has played a major rôle in the past. The Braxton Hicks method has been the most popular. Munro Kerr[7] makes the good suggestion that an external version done carefully lessens greatly the intra-uterine manipulations necessary to bring down a foot, and that less disturbance of the placenta is the result. The thigh and breech make an excellent plug and exert the necessary pressure to stop bleeding from the separated placental site. In the complete variety of placenta prævia it may be necessary to go right through placental tissue to bring down a foot. In such a procedure the baby is nearly always sacrificed. Version preceded by vaginal packing carries a high maternal mortality with it. The worst feature of bringing down a foot, I believe, is the great temptation to hurry delivery.

The Hydrostatic Bag has its advocates. It may be used to initiate labour, to secure increased dilatation and to stop hæmorrhage. The intra- or extra-ovular use of the bag is still a matter of controversy. Advocates of the bag claim for it a much lessened fœtal mortality.

In many clinics this claim is not borne out by results.

Rapid manual or mechanical dilatation together with rapid delivery of the child either by forceps, pituitrin or by breech extraction is mentioned only to be thoroughly condemned.

Cæsarean Section.—Even in conservative schools the indications for section are being slowly but surely increased. Cæsarean section will be limited to hospital practice, but even in hospitals, unfortunately, many are denied the benefit of this method by previous tamponade or internal manipulations. It is not the elderly primapara at or near term with a complete placenta prævia that will tax the judgment, but rather those, who, if they had been seen early, before their condition had become precarious or before doubtful examinations and interference, might have been comparatively good risks for abdominal delivery. Only by keeping in mind hæmorrhage, sepsis, trauma and the child will the best procedure be undertaken.

The conclusions arrived at by Watson and Miller[8] are well worth serious thought. From facts and statistics which they themselves could check they were forced to this general conclusion, that the best results for both mother and child were obtained by the two extreme methods. (1) Conservative treatment with little or no interference. (2) Radical treatment or Cæsarean section. Following delivery every effort must be made to conserve blood and combat shock.

In a review of 2,000 consecutive cases admitted to the public wards of the Winnipeg General Hospital prior to March 31, 1927, there were found nine cases in which a diagnosis of accidental hæmorrhage had been made, an incidence of one in 220. In these cases the average age was 33 years while the number of previous pregnancies was slightly more than five. In six, gestation was thirty-five weeks or more. In only one was albumen found in the urine and not one showed increased blood pressure. One gave a doubtful history of trauma, while in another a short cord was the cause of premature separation of the placenta. External hæmorrhage was present in all cases, six being recorded as profuse. In only one was the patient's condition considered alarming. Abdominal pain and a tender uterus was noted in only one case. Conservative methods of treatment were used, sedatives and intravenous fluids when considered necessary, rupture of membranes and a tight abdominal binder. Two cases received uterine stimulants *ante partum*. There were no maternal deaths and four children survived. It will be seen that in this small group of cases none of the severe type of premature separation of the placenta were encountered.

In the same 2,000 cases placenta prævia occurred sixteen times. One patient died a few minutes after admission. In the fifteen cases treated there were no maternal deaths. Three children survived, each one was born as a vertex. The hydrostatic bag was used once without success as far as the baby was concerned, but it did stop hæmorrhage during dilatation. Vaginal tamponade was employed once prior to version, the mother developed a slight septic temperature for a few days post partum. In nine cases a version was performed and a leg was brought down: not a single baby survived. Though the maternal outcome was fortunate in these nine cases, it is felt now that abdominal delivery would have been less of a risk in at least three of these and at the same time three babies would have had a good chance of leaving the hospital alive.

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An Address

ON

THE EFFECT OF ANÆSTHETICS ON THE BODY AS A WHOLE*

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THIS is perhaps the most important consideration in the choice of and in the administration of an anæsthetic. Looking over the statistics relating to deaths from the various anæsthetics in use, one receives an impression of safety—of how slight is the risk run in taking an anæsthetic. When, however, we consider the possibilities of injury to parts of the human structure which may follow as a result of anæsthesia we are confronted with an altogether different aspect of the situation. We find that a more or less temporary derangement of some part of the body may result, or in rare instances even permanent disability. The vital organs, heart, liver, kidneys, and nerve cells, are all potentially liable to serious injury, for unfortunately anæsthetics do not merely inhibit the action of the nervous system, but they alter, to a greater or less degree, the metabolism of every cell in the body. We may consider this from the standpoint of primary and secondary effects. The primary effects are the changes produced by the anæsthetics themselves on the cells of the body, such as the inhibition of oxidation in nitrous oxide anæsthesia, and the destruction of liver cells by chloroform. The secondary effects are the changes caused by substances which are produced in the body by the derangement of the normal metabolism, such as the decrease in the normal alkalinity of the blood, an interference in the function of the liver cells, hæmolysis, etc.

The perfect anæsthetic is not yet. Whether the precious gas or liquid, whichever it may be, will ever appear, is extremely doubtful. At present, among the known chemical substances, there seems to be nothing likely to displace those already in use. Although, in the last few years, several new gases have been employed, they all, like those previously in use, fall short of perfection, inasmuch as they, along with their anæsthetic power, produce certain undesirable effects and lack, wholly or in part, certain desirable qualities. At present we are unable to produce complete oblivion to painful stimuli with the certainty of not having caused at least a slight, temporary damage to some other organ or tissue. We are here, however, in no worse plight than the other branches of medicine. Whenever a drug, be it a chemical, vegetable, or mineral compound, is used, in addition to the desired result there invariably occur undesirable effects. Indeed the administrator of most drugs is in far worse plight than the anæsthetist, for he may, through misjudgment of dose, or for other reason, fail to produce the main desired result; while in our own specialty attainment of the main result is never in doubt, and we have but to induce it with the least by-effects possible. The dose also can be accurately gauged in the case of the inhalation of a volatile drug and when the desired effect is produced our patient can be held at that point, or if necessary, the depth may be altered at will. On the other hand, drugs taken into the stomach or injected into the circulation become to a considerable extent beyond our control, and, as constitutions differ and are affected more or less profoundly by a similar quantity of drug, it is obvious that there can be no exact universal dose.

In the early days of chloroform anæsthesia notice was taken of certain post-operative deaths, inexplicable on surgical grounds, which Caspar suggested in 1850 were due to some action of that drug. It was later pointed out that albuminuria, usually transient, occurred in about 50 per cent of post-operative cases. Many experimenters have shown that there is a definite action on the heart muscle, liver and kidneys, producing

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granular swelling and fatty degeneration.[1] Large amounts of lactic and other non-volatile acids are also produced during anæsthesia especially with ether. As a result of the consequent lowering of alkaline reserve the system cannot neutralize the acids produced by deranged metabolism. This accumulated acid increases the hydrogen ion concentration and, as a result, causes the colloids of the cells, particularly the proteins, to absorb water. One result of this absorption of water is to decrease to a marked degree, if not entirely stop, the secretion of urine. The absorption of water and the resultant swelling, which also takes place in the kidneys, tends to further derange urinary secretion. For these reasons the waste products of metabolism, including an increasing quantity of acids, cannot be eliminated, thus setting up a vicious circle, which the system fails to check in extreme cases.

Another result of the absorption of water is to produce a pressure on the brain from enlargement of that organ due to the absorption. This pressure may be the cause of a number of undesirable symptoms.

In dogs, at least, the effect of ether on the kidney secretion is not marked in young animals, but is shown in older animals in ten to fifteen minutes.

The fall in alkaline reserve under ether and chloroform seems to have no relation to the duration of the anæsthesia, but occurs mainly in the first few minutes. In one case an anæsthesia lasting ten minutes produced a decrease of 7 volumes per cent in the alkaline reserve. Stehle and Bourne showed that there was a decrease of phosphorus in the muscle tissue during anæsthesia, and it has since been put forward by Potter[2] that the phosphoric acid leaves the muscles as a hexose phosphoric acid $C_6 H_{10} O_4 (_2 P O_4)_2$. Embden and other workers have also shown that this compound exists in muscle.

Buckmaster and Gardner state that chloroform markedly reduces the oxygen content of the blood—from 13.6 to 8.1 per cent, which may explain the readiness with which this drug produces fatty degeneration. The consumption of oxygen is also markedly varied by the depth of anæsthesia. For example a dog whose oxygen consumption was 300 c.c. per minute during light anæsthesia, fell to 25 c.c. per minute when narcosis was deepened. As in most cases of nitrous oxide anæsthesia there is necessarily a limitation of oxygen, producing a greater or less degree of anoxæmia, the foregoing is a probable explanation of the manner in which this inert gas induces disturbances in the pH equilibrium. The fact that ethylene and acetylene, particularly the latter, can be successfully administered with a greater percentage of oxygen, is one of the promising features in relation to these anæsthetics. However, it is still early to prophesy as to their ultimate success, as the possible pathological effects on the body have not yet been the subject of sufficiently extensive research, to determine whether the total of their advantages and disadvantages will weigh ultimately in their favour or otherwise.

Aside from the more remote effects on metabolism, chloroform, and in a lesser degree ethyl chloride, exert an immediate poisonous effect on the heart muscle, the former nineteen times greater than the latter. The effect of a slight overdose, or the exhibition of them in poor risks, shows on this account more profoundly. The heart cannot withstand the necessary extra strain put upon it and the consequence may be a rapidly fatal issue.

A state of perverted metabolism may go on until the entire body is in a condition of exhaustion, the so-called shock. A similar condition is also produced by hæmorrhage and by injuries, especially when involving many nerves. Here we may have a paralysis of the vaso-motor system, in which the splanchnic vessels are dilated to a degree which dangerously depletes the remainder of the body. The central nervous system, thus rendered anæmic, cannot carry on its normal functions, and, lacking prompt and efficient treatment, the organism soon succumbs.[4]

Much has been said of the effect of transmission of impulses on the cells of the central nervous system by the nerves of parts injured during an operation. To prevent this conduction some surgeons are in the habit of injecting a local anæsthetic at the site of operation. It has recently been shown by most delicate galvanometric experiments that the transmission of stimuli does not go beyond the first synapse with the patient in a condition of surgical anæsthesia. In lighter degree of anæsthesia a small amount of stimulation may pass to these central cells.

XUM

Certain pathological changes in the nerve cells of the brain were shown by Wright, in 1891, to occur on administration of anæsthetics without surgical interference; the severity of the changes depended on the duration of the anæsthesia. Since then, similar changes have been shown by many experimenters to occur as a result of fear, anxiety, and excitement. Further,[5] all anæsthetics cause a diffusion of salts from the cells, which, if sufficiently great, effect a destruction of the cell. This diffusion has, however, to be ten times the normal before permanent injury results. The rate of diffusion is increased by anæsthesia and particularly by an overdose, which may cause the death of the cell, since the nerve cell dies after complete loss of any substance contained within it.

A certain degree of hæmolysis takes place as a result of the presence of anæsthetic gases in the blood, the cause of which has not yet been made clear. Some uncompleted work of mine, the object of which is to determine the cause of hæmolysis during anæsthesia, and the relative degree of cell destruction caused by each anæsthetic, points to the fact that of all the anæsthetics in general use ether is responsible for the greatest degree of hæmolysis.

It has long been recognized that during anæsthesia a fall of temperature, amounting to one or even two degrees occurs. This, in certain operations on the abdomen, must be due in part to exposure of the abdominal contents, which sometimes is unavoidably done to a rather large extent. Inhalation of the cool anæsthetic vapour was also considered to bear a part in this chilling of the body. To obviate this loss, at least in part, it was the custom at one time—a custom still followed by some—to warm the anæsthetic vapour before presentation to the patient. Tests of the temperature of the vapour as delivered at the face piece, however, showed that after the mixture had passed through the usual length of rubber tubing there was only about three degrees of difference in temperature whether the gas was warmed at its source or not. In one instance cooling took place, in another, heat was absorbed; the tendency in either case was to approach the temperature of the surrounding atmosphere.

Some recent experiments,[6] in which ether was the anæsthetic used, atropine gr. 1/60 being administered prior to the induction, showed that a rapid fall of temperature began 5 to 8 minutes after the commencement of induction, and lasted for 25 to 35 minutes, after which the fall was much slower (about half the rate), but continued to the end of the operation; the average drop was 2° F. This fall of temperature was more rapid in light than in deep anæsthesia. It was also found that the fall was greater in females than in males. Cases suffering from pyrexia lost very little in temperature, and after 35 minutes anæsthesia even showed a slight rise, which continued to the end of the operation.

In addition to the effects produced by handling portions of the abdominal contents by the surgeon, there are certain others produced on the digestive canal by the anæsthetic itself. The effect of ether and chloroform is to inhibit the movements of the stomach, small intestine and colon, from which recovery is not complete until about an hour after cessation of the administration. Contrarily, in the case of nitrous oxide, an increase in the muscular contractions of the whole digestive canal occurs, probably in part due to anoxæmia as they are decreased with an increased supply of oxygen. On ceasing the administration of this anæsthetic, however, there occurs promptly an almost complete inhibition of both segmental and peristaltic contractions, and a slight reduction of tone in the gastro-intestinal tract which persists for more than an hour, and from which the small intestine recovers first. Ethylene produces little or no effect on the gastro-intestinal canal, the movements of the stomach and colon being sometimes exaggerated, as in the case of nitrous oxide when anoxæmia is present. These changes are evidently not due to an effect on the central nervous system, but chiefly to the action exerted on intrinsic structures, a denerved loop of intestine showing the same result. The stomach recovers its tone later than the intestinal canal; in fact Payer has shown that some degree of post-anæsthetic dilatation is present in practically all cases.

The small intestine early shows exaggerated contractions, while the colon develops a high tonicity which may approach spasticity and act as a functional, partial obstruction. This favours the accumulation of gas and fluid above the colon. The relaxation of the stomach, coupled with the retention of gas and fluid, favours gastric dilatation. This, with the exaggerated contractions of the small intestine and

the partial block in the colon, may cause cramp-like pains similar to the so-called "gas pains." The maintenance of muscular tone in the whole gastro-intestinal tract during ethylene anæsthesia will account for the commonly expressed opinion that, in clinics where ethylene is used, severe gastro-intestinal symptoms develop less frequently than with ether.

These differing effects on the gastro-intestinal tract are manifested also in the incidence and duration of post-operative nausea and vomiting. For, with a dilated stomach—the secretion of that organ and the small intestine dammed back—is it any wonder that their contents are expelled by the mouth rather than *per viam naturalem.*

Pneumonia occurs post-operatively in a certain proportion of surgical cases, less frequently now perhaps than formerly, owing to the greater care exercised in oral and nasal cleanliness, and to care in ascertaining beforehand the absence of any slight cold, particularly at times when an epidemic of such is prevalent. It was formerly the custom, and still is with some, to attribute every post-operative pneumonia to the anæsthetic. Indeed, even now, some surgeons will, with a reproachful look, inform the anæsthetist that a certain case operated on several days ago—I have known it as late as eleven days—has developed this disease. On the other hand, the dogmatic statement has been made that no anæsthetic ever caused this dread disease. One would like to lay this "flattering unction to one's soul" but we cannot yet, I think, with our present knowledge, absolve the anæsthetic of all responsibility in this respect. It seems just as unreasonable to universally condemn the anæsthetic, for we find a certain incidence of pneumonia in cases where only a local anæsthetic has been used, and also in some cases where operation had been postponed on account of a slight rise of temperature or a slight cold. Lacking the specific organism, it is obvious that there can be no infection. These are frequently present, however, in some portion of the respiratory passages in health, and in crowded public institutions are more prone to be present than elsewhere. The immediate effect of any operation, though the ultimate benefit be great, is to lower the patient's resistance and in this the anæsthetic doubtless plays a greater or lesser part according to the duration of the anæsthesia, the special anæsthetic employed and the skill in administration; the last would appear to have the chief influence so far as the anæsthetic is concerned. Granting the reduction of body resistance produced by the above factors, of which the operation is usually the chief, we have a more or less fertile soil for the implantation and rapid reproduction of organisms. Some anæsthetics as for instance, ether, produce more irritation in the air passages than others and so provide a more favourable medium for growth; similarly, with certain operations. The pain resulting from any but shallow respirations after operation in the upper abdomen causes the patient to use only the upper portion of his lungs, and to hold the diaphragm as quiet as possible. Thus the lower lobes of the lungs are condemned to disuse for two or three days following the operation affording a favourable condition for the development of any pathogenic organism. Other infections besides pneumonia occur occasionally, such as empyema, bronchitis, and lung abscess. Abscess formation may be due, to the inhalation of some septic material or foreign body, such as, secretion from a septic tonsil or a decayed tooth inhaled during operations on the mouth. It is now generally conceded that one cannot charge the anæsthetic, even ether, with all the post-operative evils that befall.

Special care must be taken in patients the subjects of thrombosis. Any excitement or struggling in such may set free an embolus with disagreeable or fatal results. Again, multiple small fat emboli may be set free from tissues handled during the operation, and be the cause of numerous small pulmonary infarcts, resulting in much distress to the patient and in some cases even to a fatal issue.

In spite, however, of the many untoward effects that may be produced by the administration of an anæsthetic—the apparent thousand risks run—which almost seem to preclude its use, the fact remains, that, in the hands of the skilled anæsthetist, these potential dangers lose their terrors both immediate and future, so that countless thousands of sufferers are annually wafted, through Elysian fields, on the gentle

vapour of nitrous oxide or other nepenthe with a discomfort and danger so slight, in comparison to the great gain which ensues, that the public has lost much of the dread with which it formerly viewed the temporary loss of consciousness entailed during an average surgical operation.

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A CASE OF CHRONIC GLYCOSURIA, PROBABLY OF EXTRA-PANCREATIC ETIOLOGY*

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THE correct evaluation of glycosuria occurring in patients without the characteristic symptoms of diabetes mellitus is not infrequently wrought with considerable difficulty. Observation of such cases for an extended period of time is of considerable value because through it may come the complete understanding of these obscure conditions. Renal glycosuria is well defined as a clinical entity and is usually considered not to progress into true diabetes mellitus. The fundamental nature of the functional disturbance is still obscure. "Benign glycosuria," or by others termed "diabetes innocens" is not so well defined, offering as it does transition stages of all degrees from renal glycosuria on the one hand to true diabetes mellitus on the other. Recently, however, the trend of opinion has been that this type of glycosuria never progresses into true diabetes mellitus. Long continued observations are necessary to prove this opinion.

The observations on the case being reported cover ten years. Primarily, in January, 1917, the findings indicated that it was possibly an atypical case of renal glycosuria. Subsequently, in January, 1927, more complete studies revealed findings sufficiently definite to suggest an extra-pancreatic explanation for the same.

CASE HISTORY

Case No. 25121.—G. W., a woman of 26 years, was admitted to the Royal Victoria Hospital, January 16, 1917. Her complaints were sugar in the urine, and slight loss of weight. Ever since her last pregnancy, seven months previously, she had had glycosuria. During this period there had been slight thirst and polyuria. Restriction of her carbohydrate intake had made no difference in the glycosuria.

The personal and family histories were unimportant. There was no history of diabetes mellitus in the family.

Physical examination showed a fairly well nourished woman of a neurotic temperament. Her weight was 128 pounds. The various systems showed nothing abnormal and the blood pressure was systolic 130 and diastolic 80 m.m. Hg.

During her period in the hospital, which extended over thirty-six days, glycosuria was of frequent occurrence, varying from one to six grammes in the twenty-four hour urine and showing very little relation to the total carbohydrate intake. At infrequent intervals the twenty-four hour urine failed to show glucose with Fehling's qualitative reagent. Fasting

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and digestion blood sugars were always within normal limits. The exact nature of the reducing substance in the urine was established by yeast fermentation, and by the preparation of glucosazone crystals. A glucose tolerance test was done on January 25, 1917, the data being recorded in Table I.

TABLE I.

GLUCOSE TOLERANCE TEST

January 25, 1917.

Time	*Urine*			*Blood Sugar*
	Volume	*Glucose*		
	c.c.	per cent	grammes	per cent
7.45 a.m.	29	0.51	0.15	0.090
8.00 a.m.	100 grammes of glucose in 300 c.c. lemonade			
9.00 a.m.	72	3.48	2.51	0.172
10.00 a.m.	210	3.48	7.31	0.185
11.00 a.m.	152	3.75	5.70	
12.00 noon	202	2.38	4.81	0.149
2.00 p.m.	156	1.19	1.86	0.076
4.00 p.m.	94	trace	—	0.066
6.00 p.m.	80	0	—	—

Total = 22.34

Renal threshold for glucose approximately 0.07 per cent

With a fasting blood sugar of 0.09 per cent there was 0.51 per cent of glucose in the urine. After the ingestion of 100 grammes of glucose in 300 c.c. of lemonade the maximum blood sugar was reached in two hours, 0.185 per cent, and the fasting level was not attained in four hours. Subsequently the blood sugar dropped to 0.066 per cent. With a blood sugar rising from 0.172 to 0.185 per cent there was 3.48 per cent of sugar in the urine. With a falling blood sugar glycosuria stopped at about the level of 0.07 per cent, which level was considered to be that of the renal threshold for glucose.

After leaving the hospital in February, 1917, she remained well and free from symptoms until November, 1926. *No restriction of the diet was observed.* With a pregnancy in the winter of 1921 to 1922, her urine was examined eight times and only on one occasion was a reducing substance found. At full term a ten pound baby was delivered. Ever since glycosuria has been constantly present.

Second Admission.—Case No. 46489. On January 16, 1927, the patient returned for observation. No symptoms had developed referable to the glycosuria. Physical examination was quite negative. Her weight was 116 pounds. The urine showed a high percentage concentration of glucose. There was no ketonuria. The blood Wassermann was negative.

From the daily data in Table II, a definite relationship between the intake of carbohydrate and the quantitative excretion of glucose will be noted. With one fast day glycosuria stopped. Upon admission the fasting blood sugars were 0.174 and 0.153 per cent, January 17th and 18th respectively. On January 24th, after two days of a low diet, the fasting blood

TABLE II

DAILY DATA OF INTAKE AND OUTPUT

Date	*Intake*			*Total*	*Urine*			*Blood Sugar*		*Remarks*
	Prot.	*Fat.*	*C.H.O.*	*Calories*	*Volume*		*Glucose*	*Fasting*	*1.5 Hours*	
1927	grm.	grm.	grm.		c.c.	per cent	grm.	per cent	per cent	
Jan. 17	53	87	53	1244	1800	1.66	29.88	0.174	0.206	
" 18	36	49	136	1161	1900	2.18	41.42	0.153	—	100 grammes of glucose for special test. Two meals only.
" 19	53	98	53	1346	2225	0.61	13.57	—	—	
" 20	14	33	18	432	1080	0.29	3.13	—	—	Two meals only.
" 21	9	17	110	646	3126	1.45	45.32	—	—	100 grammes of glucose for special test. Two meals only.
" 22	0	0	0	0	1600	0	0	—	—	Fast day.
" 23	26	49	27	673	2150	0	0	—	—	
" 24	50	125	100	1778	2000	0.78	15.60	0.101	0.140	
" 25	50	100	100	1545	2475	0.91	22.52	—	—	
" 26	50	125	100	1778	1975	1.61	31.79	—	—	
" 27	34	69	200	1601	2110	2.49	52.53	—	—	100 grammes of glucose for special test. Two meals only.
" 28	50	103	150	1778	1750	3.47	60.72	—	—	
" 29	50	103	150	1778	1975	4.90	96.78	—	—	
" 30	50	103	150	1778	1925	2.64	50.82	—	—	
" 31	0	0	100	410	1510	2.34	35.33	0.198		100 grammes of glucose for special test. No meals.
Feb. 2	50	103	150	1778	2300	2.40	55.20	—	—	
" 3	50	103	150	1778	1650	3.10	51.15	0.178	0.260	
" 4	50	103	150	1778	1975	3.60	71.10	—	—	

sugar was 0.101 per cent. Upon three occasions the digestion blood sugar showed an appreciable increment increase over the fasting values. The irregularity in the quantitative glucose excretion on a constant diet was marked, varying from 50.8 grammes to 96.8 grammes of glucose per day within the period from January 28th to February 4th. From January 24th to 26th inclusive, with a carbohydrate intake of 100 grammes, the average daily glycosuria was 23.3 grammes. From January 28th to 30th inclusive, with the same total calories but 50 grammes of carbohydrate added, the average daily glycosuria was 69.44 grammes, an increase of 46.14 grammes. Thus there followed almost a quantitative excretion of the added carbohydrate. At a later period, from February 2nd to 4th inclusive, with the same carbohydrate and total caloric intake, the average daily increment increase of glycosuria was only 35.85 grammes.

A glucose tolerance test, similar to that done in 1917, is recorded in Table III.

TABLE III.

GLUCOSE TOLERANCE TEST

January 18, 1927.

	Urine				
Time	*Volume*	*Sp. Gr.*	*Glucose*		*Blood Sugar*
	c.c.		per cent	grammes	per cent
8.45 a.m.	—	—	—	—	0.153
9.00 a.m.*	52	1026	1.22	0.63	—
9.30 a.m.	—	—	—	—	0.210
10.00 a.m.	106	1022	2.75	2.92	0.267
10.30 a.m.	—	—	—	—	0.315
11.00 a.m.	378	1016	2.89	10.92	0.366
12.00 noon	314	1012	2.50	7.85	0.291
			Total = 22.32		

* 100 grammes glucose given in 300 c.c. lemonade. Extra fluid 200 c.c. per hour.

With a fasting blood sugar of 0.153 per cent a marked hyperglycæmia followed, a maximum of 0.366 per cent being attained in two hours and at the third hour the value was almost twice that of the fasting blood sugar. The percentage concentration of sugar in the urine was much less with a blood sugar range of 0.267 to 0.366 per cent than in 1917 with values from 0.172 to 0.185 per cent. It may be significant that during a three hour period, the total glycosuria following 100 grammes of glucose corrected for the basal excretion rate, was approximately the same in 1917 as in 1927, namely 15.07 and 19.80 grammes. This took place with different fasting blood sugars, different glucose thresholds, and different percentage concentrations of glucose in the urine.

A subsequent attempt, as shown in Table IV, was made to determine the exact glucose threshold in the kidney.

TABLE IV.

RENAL THRESHOLD FOR GLUCOSE

February 1, 1927.

	Urine				Blood	Fluids
Time	*Volume*	*Sp. Gr.*	*Glucose*		*Sugar*	*Given*
	c.c.		per cent	grammes	per cent	c.c.
8.55 a.m.	—	—	—	—	0.162	—
9.00 a.m.	100 grm. of glucose by mouth					300
10.00 a.m.	26	—	3.93	1.02	—	200
11.00 a.m.	142	1036	4.91	6.97	—	200
12.00 noon	156	1024	3.93	6.13	0.303	200
12.30 p.m.	222	1016	2.56	5.68	0.351	200
1.00 p.m.	145	1014	2.03	2.94	0.297	200
1.30 p.m.	150	1014	2.26	3.39	0.290	200
2.00 p.m.	96	1012	1.35	1.25	0.240	200
2.30 p.m.	20	—	2.36	0.47	0.224	200
3.00 p.m.	48	1010	0.78	0.36	0.190	200
3.30 p.m.	96	1008	0.42	0.40	0.174	200
4.00 p.m.	154	1006	0.17	0.26	0.168	200
4.30 p.m.	148	1004	0.11	0.16	0.162	200
5.00 p.m.	156	1002	0.09	0.14	0.156	200
5.30 p.m.	158	1008	0.09	0.14	0.154	200
6.00 p.m.	165	1008	0.09	0.15	0.147	200
6.30 p.m.	44	1014	—	—	0.152	200
7.00 p.m.	240	1008	0.09	0.22	—	200
7.15 p.m.	—	—	—	—	0.174	—
7.30 p.m.	24	—	—	—	—	—
7.30 p.m. to 6.30 a.m.	570	1008	0.73	4.16	—	—
			Total = 33.84			

Renal threshold for glucose approximately 0.14 per cent.

GLUCOSE UTILIZATION RATE

To obtain more direct evidence of the ability of the subject to oxidize glucose, three similar respiratory experiments, each after 100 grammes of glucose by mouth, were done. The technique in each instance was the same. With the patient in the "basal" state an hourly basal observation was obtained, after which the glucose was given. Subsequently in 30 minutes, 1 hour, 2 hours and 3 hours, as stated, the total metabolism was determined. Expired air was collected for ten minute periods in Douglas bags, the volume determined by a wet meter, and gas analyses completed in duplicate on the Henderson machine. Fluid intake was kept constant at 200 c.c. per hour. Urine was collected every hour. Correction of the total metabolism for the protein metabolism as determined by the urinary nitrogen made possible the calculation of the non-protein respiratory quotient. From the non-protein respiratory quotient the non-protein calories were calculated according to

Lusk.[1] These observations are shown in Table V.

The first experiment, on January 21st, followed four days of a rather low carbohydrate intake; the second, on January 27th, followed three days of an intake of 100 grammes of carbohydrate; and the third, on January 31st, followed three days of an intake of 150 grammes of carbohydrate (see Table II). The constancy of the basal level of heat production, namely 34.2, 33.1 and 32.6 calories per square meter per hour, lends accuracy to the subsequent observations.

The consecutive observations show a direct parallelism between the increasing carbohydrate intake and the basal respiratory quotient, namely 0.716, 0.733 and 0.782. After four days of a low carbohydrate intake the experiment on January 21st showed a glucose utilization rate in the basal hour of zero, which rose to a maximum of 1.75 grammes per hour in the third hour. On January 27th, after three days of a carbohydrate intake of 100 grammes, a maximum utilization rate of 11.9 grammes per hour was obtained. A similar oxidation rate of 11.02 grammes per hour was found at the end of the third hour in the experiment of January 31st. These results are quite comparable with those of Finley and Rabinowitch[2] who in 1924 reported a maximum glucose oxidation rate of 11.7 grammes per hour in one case of renal glycosuria, and of Paullin[3] who, in a study of four cases of renal glycosuria obtained a maximum oxidation rate of 11.9 grammes per hour. Both authors concluded that glucose oxidation was normal. Of significance is the constancy in the three experiments of the total glucose excretion over three hour periods, after correcting for the basal glucose excretion rate. This totaled 17.20, 17.18, and 15.90 grammes respectively.

Discussion

This case would appear to be of considerable interest since the character of the findings have so markedly changed during an interval of ten years.

Primarily, in January, 1917, almost constant slight glycosuria was present, the associated symptoms being of questionable significance. A renal threshold for glucose of approximately 0.07 per cent was present. The fasting blood sugar was repeatedly found to be normal, but after 100 grammes of glucose by mouth the blood sugar rose to a maximum of 0.185 per cent, and there was an appreciable delay in its decline. This rising blood sugar was paralleled by a glucose percentage concentration in the urine to a maximum of 3.75 per cent, which proved that the glycosuria was not altogether independent of the carbohydrate intake.

An interval of ten years elapsed without dietetic control, and no symptoms characteristic of diabetes mellitus developed. During this interval a normal pregnancy was completed, which was associated with the absence of a reducing substance in the urine in seven out of eight examinations. This is of special interest, for usually there is a tendency for the glucose threshold in the kidney to become still lower with pregnancy.

TABLE V.

Glucose Utilization Rate

Date	*Period*	*R. Q.*	*Non-Prot. R. Q.*	*Calories Per Sq.M. Per Hour*	*Percentage Increase*	*Oxidized Prot.*	*Oxidized Fat.*	*Oxidized C.H.O.*	*Urine Nitrogen*	*Urine Glucose*	*Remarks*
1927				per cent	grm.	grm.	grm.	grm.	grm.		
Jan. 21	Basal	0.716	0.687	34.2	—	3.08	4.29	0	0.477	0	100 grammes of glucose in 300 c.c. of lemonade at zero hour B. M. Rate:— 4.8 per cent.
	1 hour	0.703	0.692	39.3	+14.9	1.42	5.87	0	0.220	0.88	
	2 hours	0.742	0.722	37.6	+ 9.9	3.20	4.54	0.64	0.495	6.02	
	3 hours	0.760	0.748	35.8	+ 4.7	2.40	4.14	1.75	0.371	10.30	
Jan. 27	Basal	0.733	0.715	33.1	—	2.44	4.23	0.31	0.377	0.43	100 grammes of glucose in 300 c.c. of lemonade at zero hour B. M. Rate:— 8.1 per cent.
	30 mins.	0.820	0.822	36.4	+ 9.4	0.96	1.52	2.56	—	—	
	1 hour	0.777	0.773	37.6	+13.6	0.96	2.03	1.55	0.298	2.86	
	2 hours	0.933	0.955	40.2	+21.5	2.02	0.82	11.90	0.313	5.72	
	3 hours	0.852	0.862	36.5	+10.2	2.18	2.28	6.71	0.337	9.90	
Jan. 31	Basal	0.782	0.773	32.6	—	3.42	2.91	2.22	0.529	1.93	100 grammes of glucose in 300 c.c. of lemonade at zero hour B. M. Rate:— 9.0 per cent.
	30 mins.	0.879	0.897	36.5	+12.0	1.20	0.83	3.99	—	—	
	1 hour	0.847	0.857	37.3	+14.4	1.20	1.18	3.28	0.372	6.58	
	2 hours	0.855	0.865	38.4	+17.8	2.16	2.36	7.26	0.334	6.78	
	3 hours	0.940	0.965	35.9	+10.1	1.80	0.57	11.02	0.279	8.33	

Subsequently, ten years later, in January, 1927, an elevated fasting blood sugar was found, which dropped to a normal figure after two days of a low carbohydrate intake. After a few days of a high carbohydrate intake the fasting hyperglycæmia returned. Both the percentage concentration and the total excretion of sugar in the urine varied directly as the carbohydrate intake. The renal threshold for glucose was 0.14 per cent. When raising the carbohydrate content of isocaloric diets from 100 to 150 grammes there was almost quantitative excretion of the added carbohydrate. After 100 grammes of glucose by mouth the blood sugar rose gradually to a maximum of 0.366 per cent in two hours, and at the third hour it was almost twice the fasting level.

Respiratory studies showed that following a graded carbohydrate intake, an increasing basal respiratory quotient could be obtained, namely 0.716 to 0.782. That glycogen storage was active might also be concluded from the failure of the respiratory quotient to rise on January 21st, after a low carbohydrate intake. Following a more generous carbohydrate intake with basal respiratory quotients of 0.733 and 0.782, normal maximum glucose oxidation rates of 11.90 and 11.02 grammes per hour were obtained. Furthermore, the excretion of glucose was practically the same no matter whether storage or oxidation was the more active.

The fundamental conception of true diabetes mellitus demands that there must be impaired glycogen storage and impaired glucose oxidation. In this case there was no direct evidence of impairment of either of these functions. This occurred with a definite fasting hyperglycæmia which was related to the carbohydrate intake, an almost quantitative excretion of added carbohydrate, and excessive hyperglycæmia after the ingestion of 100 grammes of glucose.

It would appear from the above findings that in no respect were the fundamental conceptions of true diabetes mellitus fulfilled. Apparently from some source an excessive supply of glucose was being constantly thrown into the blood stream. Since the main single reservoir of carbohydrate in the body is probably the liver, that organ was most likely the one involved. We know that stimulation of the sympathetic nerve supply of the liver will result in increased glycogenolysis which inhibits that organ from carrying a normal glycogen reserve.

Thus the occurrence of glycosuria in this case might be explained on the hypothesis that *there was an hyperactive sympathetic nerve supply to the liver maintaining an excessive rate of glycogenolysis of the liver glycogen,* this taking place independently of pancreatic disease. Possibly, the factor that controlled the level of the fasting blood sugar was the glucose threshold in the kidney. In 1917, when the glucose threshold was 0.07 per cent, the fasting blood sugar averaged 0.02 per cent higher. In 1927, with a threshold of 0.14 per cent, and a moderate carbohydrate intake, the fasting blood sugar also averaged 0.02 per cent higher. By fasting, the factor of glycogenolysis could be so greatly reduced that the blood sugar fell to normal, and again by an increased carbohydrate intake the fasting blood sugar could be slightly raised. This hypothesis would be compatible with a normal ability to store glycogen and a normal tissue oxidation rate. Again, it would explain the marked rise in blood sugar after the oral ingestion of glucose and the corresponding glucose excretion rate, the percentage concentration of the urinary glucose being largely controlled by the level of the renal threshold. With a greater continuous supply of glucose entering the portal system a higher fasting level of blood sugar would be maintained. This, according to the laws of mass action, would result in a greater percentage carbohydrate combustion since the tissues were not defective in that capacity. Thus were found the higher basal respiratory quotients. Since the decline in the blood sugar curve depends in the main upon the antagonism between the rate of absorption and the rate of storage and oxidation, the delay in its decline, both in 1917 and 1927, would have to be explained by the supposition that glycogenolysis was sufficiently active to temporarily offset storage. The finding of a similar total three hour glucose excretion in the three respiratory experiments, independent of the evidence of storage or oxidation would also be compatible.

Summary

A case of glycosuria, observed over a period of ten years, is reported, which fails to comply with the fundamental conception of true diabetes mellitus.

A hypothesis is advanced which is compatible in the main with the facts as determined. This accounts for the disturbance through increased glycogenolysis of the liver glycogen, possibly through increased sympathetic stimulation, and independently of any pancreatic disturbance.

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CONSECUTIVE HERPES ZOSTER AND VARICELLA, WITH VARICELLA IN A CONTACT

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A SURVEY of the literature shows that in the last thirty-five years attention has been called increasingly to the apparent relationship between herpes zoster and varicella. With the impetus of progressingly frequent reports of new instances of their association, especially in the last fifteen years, the subject has now come to occupy a conspicuous position among modern problems, which seems disproportionate to the intrinsic importance of either disease.

The earliest observers viewed the simultaneous appearance of the two diseases in closely associated persons, or in the same individual as strong evidence for a common origin of both diseases. With increasing interest a more critical attitude has been adopted, observation has been more accurate, and the laboratory has played its part, until to-day there are those who accept the theory of an invariably common origin, those who sweepingly reject it, and those who take an intermediate position.

It is not my intention in the present paper to review the literature exhaustively, for a great many of the references consist of very brief reports of cases of varicella in a child following the appearance of zoster in an adult in the family, or some other close contact, and these reports duplicate one another. Many of them lack the proper data to furnish convincing evidence for or against the theory of common origin. I have observed three such instances in the past nine years, the varicella in the child following at an interval of ten or fifteen days after herpes zoster in the adult, where no other source of contagion could be discovered. In two of the three cases, and in the one which follows, as well as in a large proportion of those in the literature, it is noteworthy that the zoster involved cervical areas.

The case which is the immediate occasion of this paper will first be described, following which some of the reports in the literature bearing upon the questions which it raises will be referred to and discussed.

Mrs. W. E., aged 40, when seen complained of an itching eruption on the neck and face. Pink itchy spots had appeared over the left deltoid region three weeks previously, and upon these papules and vesicles had developed rapidly, and the area of eruption had enlarged, extending upwards on the neck and face, and downwards over the chest. There had been neuralgic pains of moderate intensity in the shoulder for a few days preceding the eruption, and these had continued up to the time I saw her. Her physician had employed an ointment (apparently simple ointment of zinc oxide) and had later directed her to bathe the parts with a strong solution of lysol, following which the pain and irritation had become much worse. Her personal history was unimportant, except for the fact that she had never had chickenpox. She had two children, neither of whom had had chickenpox before her own illness began. Two weeks after the zoster eruption appeared on the patient her daughter aged nine developed typical varicella, the prodromata and subjective symptoms being mild, and the eruption of moderate severity. The boy, aged twelve, did not develop varicella at the time, and was still well when last heard from, which was seven weeks after the girl was taken ill, and four weeks after the mother's recovery.

The patient appeared well-nourished and well-developed, but showed evidence of pain and loss of sleep. A diffuse erythema covered the entire left deltoid, acromial, infraclavicular and supraclavicular, anterior cervical and pre-auricular regions. Over this region were numerous papules, vesicles and pustules in various stages of development, and showing grouping corresponding to the cutaneous branches of the third and fourth cervical nerve trunks. Many lesions were ruptured and covered with crusts. There was no eruption of any sort elsewhere on the body.

She was seen again one week later, after employment in the interval of cleansing and sedative applications. The eruption was drying up and she felt more comfortable. She told me that on the day following the previous visit an eruption had developed

upon all parts of the neck, face and shoulders not previously affected, and rapidly spread to the trunk. Five days later it spread to the limbs, and at the same time there appeared on the legs large purple spots which were tender. There were no other subjective symptoms except a feeling of heat and itching where the eruption was most intense.

She was now found to have a widespread eruption distributed more or less uniformly all over the body surface except the palms and soles. It was maculopapular in character, and vesicles were uniformly distributed on the trunk although less numerous than the papules. The lesions were discrete and the eruption more diffuse on the face and upper parts of the body and limbs, but on the abdomen and loins they were closely packed and confluent, forming a sheet of eruption. There was nowhere any grouping of lesions even remotely corresponding to the emergence of cutaneous branches of spinal nerves. The erythema was nowhere as intense as it had been over the herpes zoster area and less intense than is usually seen in adult varicella. The uniform, closely-packed eruption which the patient presented on the middle part of the body was quite unlike anything I have encountered before in varicella, and had I seen no other areas varicella would not have been suggested to me. The lesions on the other parts however were sufficiently characteristic. There were several discrete vesicles on the labial and buccal mucosæ, and one on the bulbar conjunctiva. The vesicles were all about pin-head size, excepting a few on the fore-arms, wrists and hands which were much larger and showed occasional pseudo-umbilication. On the front of the legs in addition to the papules there were several rounded infiltrated patches varying in size from a half dollar to silver dollar, which were red to reddish-purple in color, hot and tender, but not perceptibly raised. There were also one or two on the thighs and calves.

One week later the general eruption had largely involuted, the herpes zoster lesions were dry and healing, and the spots on the legs were bluish-green and fading, cool and but slightly tender. One month later the colour had left the latter areas, but the legs still ached, and the eruption had disappeared entirely leaving no trace in the mother and daughter excepting a few pinkish scars on their faces.

The family lived in a thinly populated rural district, the patient stated that neither her children nor herself had been out of the district for months before the illness commenced, and that there had been no chickenpox or other contagious disease within three miles for years.

A question which promptly presents itself is whether this patient had herpes zoster followed by varicella, or had what is usually termed herpes zoster generalisatus. Various classifications have been made of cases of zoster in which vesicles existed elsewhere in the body than in the segmental area where the eruption is most intense, and to which it is usually confined. Laurentier[1] distinguishes three forms of zoster:

1. Typical (with or without aberrant vesicles), limited to a nerve-root distribution.

2. "Multiple zona," extending over several nerve-root distributions.

3. "Generalized zona," whose extent is such as to mask the nerve-root distribution to such a degree that it can be disclosed only by careful examination. These he considers very rare, only five other cases besides his own having been reported, other cases reported as such being only multiple zosters.

Assuming that it is practicable to recognize and distinguish 2 and 3 of this classification, a case such as presented above belongs to neither. Delmas[2] discussing a somewhat similar case states that the clinical test between generalized zoster and varicella is the radicular topography in the former; that this is difficult to detect is admitted, but only in its absence can varicella be diagnosed. This is an answer to Roxburgh,[3] McEwen,[4] and others who remark upon the absence of criteria for distinguishing the two diseases, although it does not dispose of all difficulties. It is curious here to note the contrasting remarks of Darier[5] and Perdreau[6] regarding the vesicles in zoster and varicella respectively. The latter asks "Why are the zoster vesicles so different clinically from varicella?" while the former affirms: "La structure de la vésicule du zona est particulière, et analogue à celle de la varicelle, plus qu'à celle de l'herpès. . . .l'histologie de vésicules de zona et de la varicelle est d'ailleurs essentiellement identique."

Comparing the above cited case with others reported as herpes zoster generalisatus, certain features in the general eruption appear, which are not found mentioned in the others, these being the existence of vesicles on the conjunctiva and buccal mucosa, the large vesicles on distal parts of the upper extremities showing pseudo-umbilication, and the erythema nodosum type of lesions on the lower extremities. It is also significant that the generalized eruption did not develop until varicella had appeared in the child. Most if not all, of the cases reported, whether described as herpes zoster generalisatus or herpes zoster with coincident varicella, have shown the generalized eruption in from one to four days after the appearance of the zoster.

This time element appears important, since herpes zoster generalisatus is usually accounted for, as stated by Parounagian and Goodman[7] by the "overflow" theory: that is, the spread of the inflammation along the sensory roots. Such would be expected to happen, if at any

time, at or immediately after the appearance of the local eruption.

Upon the above points of difference, therefore, it is considered that the case reported is one of herpes zoster followed directly by varicella.

A sufficient number of instances have been reported of the type of zoster-varicella association mentioned in the opening paragraphs of this paper to make such observations comparatively commonplace. Some of the most striking have been those in which the observer was exceptionally situated so as to be able to exclude with a high degree of certainty the possibility of contagion from an ordinary source. Such are those of Brown,[8] who reported the instance of a group of children, including members of his own family, while in quarantine for pertussis, who developed varicella after one of their number had zoster; of Battino[9] who reports an almost identical observation; of Roxburgh and Martin[10] who described varicella in an adolescent following occupation of a room occupied the previous night by an adult in the prodromal stage of zoster, the adolescent becoming in turn the source of contagion for a child developing varicella, both cases of varicella developing after the lapse of the characteristic incubation period; and especially of Le Feuvre.[11] This last writer practises in Southern Rhodesia, a country which is sparsely populated, where travel is often slow and difficult, and where medical practices cover immense areas, making the tracing of epidemics easy. In the paper referred to he quotes seven cases from his own practice in four years. Two of them occurred many miles from any railway station. He has since reported more cases of his own observing, as well as a large collection from the literature, and is a firm believer in the identity of ordinary herpes zoster and varicella.

The fairly voluminous literature which has grown up consisting of observations of such associations, some of it containing full clinical data, does not amount to much more than circumstantial evidence, and is impressive by reason of its quantity only.

Although almost all the reports have been of varicella following zoster, cases of zoster following contact with varicella have been recorded. Cranston Low[12] states that a few such cases are known. Le Feuvre[11] writing in 1917 stated that up to that time only five such cases had been reported. McEwen,[4] in 1920, makes a classification of the associations of the two diseases:

1. Herpes zoster in one patient followed by varicella in contacts.

2. Herpes zoster in one patient followed by varicella in the same, not followed by varicella in contacts.

3. Herpes zoster in one patient followed by varicella in the same, followed by varicella in contacts.

4. Varicella in one patient followed by herpes zoster in contacts.

It is probable, as McEwen admits, that instances of class 2 are herpes zoster generalisatus. Instances of class 3 are very rare, he believes, only two cases besides his own having been reported, which might by liberal interpretation be placed in this class. These are the cases of Gray,[13] and Parkes Weber,[14] which he states are not clear cut.

It is considered that the case reported above belongs in this small group of rare cases, with the distinction that in it the varicella in the contact preceded that in the original zoster patient. McEwen finds only four cases in class 4, and these lacking in clinical detail, so that proving little or nothing they are only suggestive of important possibilities. Assuming that his standards for admission to the canon were more rigid than those of Cranston Low and Le Feuvre, these is nothing to be added to his conclusion. His classification might be enlarged by one additional class however to include a single case reported recently by Spillman and Créhange,[15] in which a man developed herpes zoster after a visit to his father who was suffering from zoster, whose infant daughter developed varicella. The etiological relationship between two cases of varicella in contacts is universally admitted; the same relationship between herpes zoster and varicella is disputed; but an instance of zoster resulting from contact with another case of zoster has apparently not been reported before, and when this sequence is continued by the addition of varicella in a person who had contact with the second zoster case only, we have a strong argument for the identity of the virus in all three cases.

Certain matters of observation that ap-

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parently oppose this conclusion must momentarily be touched upon here. Thus far has been discussed the relationship between cases of zoster, presumably of the idiopathic type only, and varicella. That herpes zoster is a syndrome and not a disease entity due to a single morbid agent there is much reason to believe. It has been met with following as a sequence of trauma and of pathological lesions of the cord, meninges and nerve roots, and of the bony parts of the neural canal, as in syphilis or in tuberculosis. Continuous administration of arsenic, whether in the form of liquor arsenicalis, or of one of the newer synthetic preparations, has frequently been followed by herpes zoster. Cynamide has been reported as the cause of a case of generalized zoster by Laurentier.[1] He terms zoster a "syndrome radiculo-ganglionnaire," a cutaneous reaction closely related to the trophoneuroses. Darier[16] divides the causes of zoster into infectious, toxic and traumatic. Were varicella observed to follow only the cases of the idiopathic (presumably infectious) type, it would strongly support the belief in their community of origin. But this is not the case. In two instances reported by Le Feuvre[11] the zoster followed arsenical medication. Parkes Weber[17] reports the case of a patient treated for lymphatic leukæmia with arsacetin. A zoster eruption followed, which was followed in five days by a generalized but scanty eruption of varicella-like spots. Ten days later, a child occupant of the same ward developed varicella without having been exposed to any other varicella cases. The author regards this, however, as a "mere coincidence."

Further light is thrown upon the problem by considering the immunological data furnished by clinical experience and laboratory experiments. It is well known that varicella like other exanthemata confers an immunity against further attacks which is practically absolute. It is also stated by Cranston Low[12] that no case of varicella has ever been observed in a patient who has had zoster. The same writer states further that in no case of zoster with a generalized eruption has a previous varicella been reported. The regularity with which it is recorded that the varicella following contact with zoster appears after a period of 10 to 17 days, corresponding to the incubation period of varicella, is an important point. An obvious rejoinder to a statement of belief based upon the above observations, is that varicella is exceedingly common, and that not all cases of zoster give rise to varicella in contacts. To this Darier[5] replies in turn, "si la contagion ne s'observe pas plus couramment c'est en raison de la fréquence de l'immunité acquise par une varicelle dans le jeune age; cette immunité parait du reste d'avoir une durée variable, quelquefois assez courte, ce qui expliquerait les cas de succession des deux affections chez un même sujet à peu d'années d'intervalle." Berinsohn[18] concludes indeed that the preponderance of varicella at an early age, and of zoster in later decades suggests a unity of virus.

The fact that if varicella confers any immunity against zoster it is but transient is obvious; varicella is extremely common in childhood, while zoster is not rare among adults, and few adults with zoster have escaped varicella in earlier years. That zoster confers some degree of immunity against varicella is supported by a certain amount of clinical evidence.

All these points of clinical observation are corroborated by experimental work, the results of which are still more strongly suggestive, if not convincing, of the identity or close relationship of the virus causing varicella and that causing herpes zoster.

In 1925 Kundratitz[19] reported that he had performed cutaneous inoculation in twenty-two children, who had previously had neither zoster nor varicella, with the contents of vesicles from five zoster cases. In fourteen cases he obtained positive results. In two of the cases there was a generalized distribution of vesicles, indistinguishable from the varicella exanthem. The incubation period varied from nine to fourteen days. Histological examination of the vesicles showed the "zoster bodies" previously described by Lipschütz in 1920. All cases inoculated which had had zoster or varicella were negative. The younger the child the more successful was the inoculation, and a successful inoculation protected against a subsequent zoster inoculation, and also against varicella.

Lipschütz[20] states that the inoculation experiments on the rabbit's cornea were first per-

formed by himself, producing vesicular keratitis in three out of seven cases at the end of seven days, and in which he demonstrated characteristic structures in the nuclei of epithelial and connective tissue cells, which he called "Zosterkörperchen," which are found in both the zoster vesicles and the vesicles on the inoculated cornea. He further quotes Kundratitz' experiments with children reported above, and believes that these taken in conjunction with his own work demonstrate the existence of a specific virus, producing similar cell-changes, found in both varicella and zoster, thus proving the identity of the cause of both diseases.

Gunderson[21] reports six cases in which inoculation with the contents of varicella vesicles produced zoster, the time between the inoculation and the appearance of the eruption corresponding to the inoculation period of varicella.

Netter[22] reports that he finds a crossed affinity of antigens resembling that between variola and vaccinia.

Perdreau (*loc. cit.*), considering the clinical evidence and such experimental data as are reported above, believes that we cannot at present accept the theory that zoster is caused by one and the same agent in every case, as already suggested above, in view of its not infrequently observed occurrence after trauma and known infections such as syphilis. He believes that a dual origin must be admitted, and that some cases of zoster at least are either caused by a similar action of the virus of varicella, or at least contain it in their characteristic skin lesions.

Siegl's[23] report of experimental inoculations is among the latest and most convincing published. He inoculated six children with serum from a case of zoster. Two developed varicella after an incubation period of twenty-two to twenty-three days. A third child who had not been inoculated came into contact with one of the children who developed varicella after the inoculation, and this child in turn developed varicella. Siegl considers this to be evidence for etiological relationship between varicella and clinically idiopathic zoster, while admitting that zoster, like erysipelas, may develop from other causes.

Yet there are not wanting those who do not accept or have at least been unable to corroborate the experimental findings above. Sicard and Paraf[24] state that while varicella confers immunity against varicella it does not against zoster; that children can be inoculated successfully with varicella from the contents of varicella vesicles, but that therapeutic inoculations of the contents of zoster vesicles in encephalitis has never been followed by a reaction; that the spinal lymphocytosis of zoster is not found in varicella; that the inoculation of the rabbit cornea with varicella material produces keratitis, whereas no reaction follows similar inoculation with zoster material; finally, in a case observed by them inoculation of children with zoster material did not protect against varicella.

Lehner[25] conducted inoculation experiments with the blood, blister-fluid and gland-juice in zoster and reports consistently negative results.

Lauda and Silberstern[26] attempting to corroborate the results of Netter and Urbain, who almost always obtained complement fixation in the serum of zoster patients with varicella antigen, obtained negative results in all cases. They attributed the results of the Parisian observers to the probability that most of their cases were varicellar in origin.

Cole and Kuttner[27] attempted to inoculate rabbits, guinea-pigs and monkeys in nine cases of zoster without success.

Highman[28] when discussing a case of herpes zoster generalisatus at a society meeting, stated that he did not think that the diseases were related, but that possibly the organism of varicella might occasionally produce the same cord conditions which produce zoster.

This was saying practically the same thing as is stated in the conclusions of such observers as Siegl[23] and Roxburgh[3] already mentioned.

It is certain that many disputed points involved in the question of the etiological identity of zoster and varicella remain to be settled. Whether the original infective agent is the same in both diseases or not, its exact nature is as yet undetermined; by a process of exclusion it has remained among the ultramicroscopic viruses. It is not possible to say positively that for zoster at any rate there may not be more than one agency capable of producing the typical clinical picture. There are other fairly clear-cut clinical entities, such as

lupus erythematosus, erythema multiforme, erythema nodosum, some of them once ascribed to a single infective agent, now known to have multiple causation, and referred to as "pattern reactions". This is doubtless the case with herpes zoster. The cases constantly being reported of clinical and experimental association with the evidence of careful research in many of them cannot be dismissed in bulk as coincidences. On the other hand reports are numerous, presenting facts impossible to reconcile with an invariable identity of causation of the two diseases. It appears therefore that the only conclusion which can be arrived at in the present state of our knowledge is that herpes zoster can be and is in a large number of cases caused by the same virus which causes varicella, but may also be brought about by other agencies as well.

Summary

A case is described in which herpes zoster in an adult is followed after a lapse of time corresponding to the incubation period of varicella by an outbreak of typical varicella in the daughter of the patient, who as far as could be determined had not been exposed to other cases of varicella. After a further similar period the patient with zoster, who had never had varicella, developed a generalized rash showing lesions typical of varicella, accompanied by lesions in the lower extremities resembling erythema nodosum.

Reports of clinical observations and experimental investigations furnishing evidence which has been variously interpreted as in favour of or opposed to a theory of causal identity of herpes zoster and varicella are reviewed.

It is held that the case reported is an instance of herpes zoster giving rise to varicella in a contact, followed by varicella in the patient suffering originally from herpes zoster, which varicella she contracted from the patient with varicella alone, thus completing a circle; the varicella having been returned as such to the original patient before she had recovered from her herpes zoster or had had time to develop an immunity to her original infection.

This case is offered as furnishing strong evidence in favour of the theory of common origin for varicella and a certain proportion of all herpes zoster.

It is believed that the majority of evidence from clinical and experimental sources, together with that furnished by the case reported herewith, leads to the inevitable conclusion in the present stage of our knowledge, that herpes zoster is a syndrome which may be produced by the virus of varicella as well as other agencies.

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THE CARDIAC CRIPPLE*

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OF the increasing frequency of heart disease there can be no question. While years have been added to the average duration of life, this has been accomplished by the elimination or control of infectious diseases, by the increased knowledge of disease processes, and by the discovery of new remedial agents. This increase in the duration of life has naturally brought a larger number of people to the time of life when certain types of heart disease are more common. Any comfort that we may take from this knowledge soon disappears when we further analyze statistics and find death from heart disease is also relatively more common in the fourth and fifth decades, and Poynton[1] in his introduction to Carey Coombs' *Rheumatic Heart Disease* states that the incidence of this disease is on the increase among the school children of London. It may be that the stress and high tension and the confinement of modern industrial life are factors in the increasing occurrence of sclerotic heart disease, but until we know more of the causes of arterio-sclerosis this must be mere speculation.

Importance of an Accurate History

The first essential in the care of the cardiac patient is that an accurate and thorough history be taken and recorded. Detail should be emphasized in the investigation of habits and previous illnesses. A history of scarlet fever and the presence of a systolic murmur may not be related. An attack of rheumatic carditis in childhood may have been called "influenza," and careful enquiry may discover that the illness was of longer duration than that of the usual cold and that recovery was long delayed. Thus, in reaching a diagnosis, history is of first importance and it is of equal importance in prognosis and in guidance. The limitation of the field of effort, the rate of closing in of the field of effort, the presence or the increasing frequency of night voiding, the gradual increase in the number of pillows required at night, in a word, each symptom shown requires careful and searching investigation and recording.

The Physical Examination

Next in order is the physical examination. While this of course means careful examination of the circulatory system—heart and blood vessels, with the three L's, lungs, liver and legs—it means also complete examination of all systems for signs of stasis or lessened circulatory efficiency, the estimating of blood pressure, and the recording of body weight. If doubt be felt as to the presence of a sign, this doubt should be noted. Valuable information as to the rate of progression may be gained if one has recorded a suspicion of, say, a presystolic murmur, and two years later a definitely recognizable rumble is heard. The search for, and cleaning up of, focal infections demands special care. While results are at times disappointing it is often gratifying to find distinct improvement follow the cleaning up of an apical abscess, the removal of infected tonsils, or the treatment of a pyelitis. Indeed, these measures may decide in doubtful cases whether or not the heart is the seat of disease. Laboratory examination of blood and urine is a necessary part of each examination. A high white, or a low red count, carries insistent indications for treatment. The frequency of the examinations depends on the type of disease, the extent of damage, and the rapidity of progression. It is good practice at each consultation to arrange the date of the next subsequent examination, rather than to wait until the patient feels the necessity for further advice.

Work and Exercise

Of the beneficial effect of exercise there is no doubt. This applies to the cardiac cripple probably more than to the healthy individual. The rule is work or exercise short of the amount producing symptoms and the cardinal symptoms of heart strain are dyspnœa and pain. A word of caution with regard to these symptoms. Dyspnœa

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on effort may increase so insidiously as not to be thought out of the way. If it be accompanied by definitely increased cyanosis, it is undue dyspnœa, and is to be avoided. Pain that is definitely cardiac occurs on exertion and ceases with rest, with the two exceptions of coronary thrombosis and angina pectoris.

There is no set of exercises that is of universal application. Exercise must be suited to the individual, and must vary according to his symptoms. What he cannot do without distress to-day, he may easily and safely accomplish to-morrow, and the guide is the amount of distress, rather than the extent of discoverable organic damage. The aim should be to build up and maintain as great a reserve as possible. While exercise should be as vigorous as the condition of the heart will allow, it may be vigorous without being violent or over-strenuous. It should when possible be in the open air. It should not be over-prolonged, and, of course, over-fatigue and exhaustion are dangerous. When the financial position is satisfactory, exercise is a valuable form of treatment: nine holes of golf to-day, seven or even three to-morrow. With others, the exertion involved in the daily routine duty may be more than the patient can bear. Here a period of rest, with the heavier tasks eliminated on resuming work and a rest in the middle of the day, may bring relief from symptoms. With the gradual lessening of the cardiac reserve the time comes when very limited exercise is possible. The patient with advanced coronary disease or with a heart damaged by thrombus or embolus may require more exercise than his heart will allow. With these people *massage* may be of great benefit. It removes waste products, helps venous return, and even, as Lauder Brunton[2] thought, may improve circulation by stimulation of the sympathetic nerves which accompany the peripheral arteries. It is not absolutely necessary that a specially trained masseur be employed. It can be done under supervision by untrained people, but care must be taken that the heart be not over-fatigued, or harm may result. Cyanosis may or may not be a contra-indication to exercise. With many congenital heart defects cyanosis develops on the slightest exertion, and here the amount of distress, rather than the degree of cyanosis, must be the guide. Also, in the short thicknecked type, where puffing and blowing and increasing lividity accompany almost any exertion, mental or physical, exercise may often be persisted in in spite of cyanosis.

Often in these people the trouble is in the lungs rather than in the heart, and, even when definitely cardiac, need not be too alarming, unless other signs of heart distress be present. A further modification in the exercise rule is that it may be advisable to carry on with symptoms present. For instance, cardiac pain may remain or be so easily induced that we are faced with the choice between deadening the pain and allowing an amount of exercise, or enforcing permanent cessation of all physical activity. Again, in hypersensitive patients the amount of pain is so out of proportion to the exercise inducing it, that to give in to it entirely would be folly.

Rest and Sleep

Intimately associated with the question of exercise is that of rest. The most efficient rest is sleep. Mackenzie said:[3] "It may be said with truth that no heart can regain its full strength if sufficient sleep is not obtained." Anything that interferes with sleep must be attended to; such as hæmorrhoids caused by congested liver, or skin irritation resulting from a slight œdema. Often, an adequate supply of fresh air, the use of a comfortable mattress, the replacing of sagging bed springs, may improve sleep. The adding of an extra pillow or raising the shoulders may prevent dyspnœa; night feedings may prevent faintness, and so remove a further irritation. Night restlessness or dyspnœa may require drugs. The hours of rest and sleep must be regular. The duration must suit the individual case. With much damage, a rest after meals is essential; with less damage, the rest of an hour in a comfortable position after the midday meal may eliminate symptoms entirely. As the limitation increases longer rest is imperative and shorter hours of work. One patient has been able for the last six months to work at his office about four hours only in the day. In the matter of rest and exercise one should refrain from making restrictions too irksome; as much latitude as possible should be allowed. Cardio-vascular accidents are not by any means always the result of strain and they will occur in spite of the most meticulous care.

The Diet

There are few rules to be observed, but some of these are imperative. In the first place, very large meals are to be avoided; in advanced disease they are dangerous. Many an attack of angina and many an acute failure has been determined by an overfull stomach. In the second place, the common practice of stuffing invalids with foods which do not require mastication, may be especially pernicious, since these foods promote flatulence, and flatulence is easily produced with greater or less congestion of the alimentary tract. Digestion will be better when foods which require thorough mastication are provided, and when all foods, even milk, are thoroughly mixed with saliva and so stomach and intestinal digestion facilitated. The patient eats in this way until the appetite is satisfied, and if this rule be followed and feedings are frequent enough, one need have little fear of under-nourishment on the one hand, or of over-feeding and obesity, on the other. In the third place, if one remembers the close proximity of the stomach to the heart, and also remembers the effect on the heart of sudden cooling, one will markedly restrict or altogether abolish cold fluids. A pint to a quart of ice water has before now caused a healthy heart to stop beating.

Constipation should also be dealt with under this heading. It may be due to a change in habits and the leading of a sedentary life; a faulty heart may be associated with general abdominal congestion, or may be due specially to passive congestion of the liver. The first variety, without signs of abdominal congestion, may be dealt with as one deals with ordinary habit constipation; possibly the diet may be made somewhat more bulky; flax seed, agar, or mineral oil, may be used, but of greater importance is the correction of sedentary habits. If exercise cannot be allowed, then massage, and particularly abdominal massage, may replace physical exercise. The second variety usually occurs with other signs of increasing congestive failure and will yield to a certain extent to treatment directed to the circulatory system generally. The third variety, associated with passive congestion, may give greater and greater trouble as the disease progresses. Flatulence and constipation are very often associated with this condition. The wearing of an abdominal support is often helpful. Sulphur lozenges (5 grains), three or four at bedtime, or, if necessary, the compound powder of jalap in forty to sixty grain doses may help, particularly if a mercurial purge be given once a month or oftener. If a saline cathartic be required the sulphate of sodium can be given over longer periods than can the sulphate of magnesium. Flatulence may be ameliorated by using acid potassium tartrate, thirty to sixty grammes in a glass of hot water, on arising or half an hour before meals.

Drugs

Drugs other than the above are required only when definite indications exist. The day has surely gone, when the mere presence of a heart lesion calls for digitalis. The fibrillator will probably be leading a digitalis life. His dose, once a day for convenience, will be that which holds his pulse rate about seventy at rest. His dose may vary as he gets a new supply of the drug, owing to the notorious difference in potency between preparations, and between different lots of the same preparation. Supply him with a minim glass if he uses the tincture, and do not have him count drops. He may take the dried leaves in capsule, one grain being equal to ten minims of the tincture. The use of digitalis in other conditions is confined to the breakdown periods as a rule, and does not come within the scope of this paper. If paroxysms of tachycardia are occurring with sufficient frequency to make it a crippling condition, the routine use of quinidine begun very cautiously and usually required in quite small doses, may lessen the frequency of the attacks. For nervous cases our best remedy is the bromides. Mackenzie[4] preferred the bromide of ammonium. Twenty grains may be given three times a day, or thirty grains in hot milk at bedtime. Pain while usually efficiently treated by rest and proper exercise may require drugs for its amelioration. Bromides may be sufficient here, or luminal; more severe pain may require chloral, or even opium, and restlessness during the night, nocturnal dyspnœa, or milder cardiac asthma, may require these same remedies. Varying degrees of anæmia may require iron in the food

or as a drug. Anæmia should be carefully watched for, and carefully treated.

On Climate

Our climate has some drawbacks—the even temperate climate is best. Extremes of heat and cold are not well borne and high winds are trying. Here, extreme cold cannot be avoided and our patients may have to stay indoors, or extra protection to the chest may have to be provided. It is probable that our extremes of cold affect the heart directly, as well as increase its work, by the effect on the peripheral circulation.

There are many and varying opinions as to altitude. It has become the fashion to make light of its effects. Many of our patients will not agree to regard our altitude as not objectionable, while many more are as comfortable here as at the sea-level. Some with cardiac pain find the pain less annoying in coast climates where raw winds are absent. While it is true that the result of change of climate may be disappointing, it is equally true that nervous people and those with chronic or easily induced pain are often better with a change. Vaquez[5] states: "High altitudes are rightly considered dangerous, and it is not unusual that the first symptoms of failure appear during sojourn in the mountains. Patients suffering from mitral lesions complain of little except an unusual acceleration of the heart, and oppression in breathing which is relieved on returning to a lower level. It is a more serious matter with hypertensive or aortic patients, with whom it may end in sudden dilatation of the left heart, with œdema of the lungs." He says again,[6] "Lower altitudes 1,600 to 2,000 feet, for instance do not produce the same effects." They are especially well borne by many patients. It seems then that our altitude is betwixt and between, and, according to Vaquez, we should find, as we do, some particularly well in our climate and some to whom it is very trying.

Prognosis

Prognosis in heart disease depends on so many factors beyond our control that it is exceedingly difficult. The rate of increase in limitation of effort, always remembering the acceleration of symptoms as the patient goes down hill, will give us help. Increasing weight, and frequent changes in weight, indicate fluid retention and stasis. A gradual or sudden decline in blood pressure, other things being equal, or a rapid increase, often indicate a failing myocardium. Material increase in the size of the heart, a more rapid pulse rate at rest, the finding of red blood cells in the urine, the need of more pillows at night, deepening cyanosis, increasing signs of cerebral anæmia, are signs of rapid progression. If extra systoles, not previously present, occur fairly frequently, or, if present before, show a marked increase in frequency, a breakdown at least is probably imminent. The gallop rhythm is a sign of failure; the later in diastole it occurs the more grave its significance. An alternating pulse in chronic heart disease means an early termination. It may be detected and should be looked for when estimating blood pressure. The beats are practically evenly spaced but each alternate beat is weak. It may be noticed first following an extra systole, and one may get the impression of a second extra systole. Careful timing will correct the impression. Usually every second beat is weak and the rate heard at first is exactly half the actual rate. A difference of one or two millimetres between strong and weak beats is hard to appreciate. Usually a difference of three to five, or even seven, is found. Where no other grave sign was found the longest duration of life, after the presence of alternation was recognized, was three years from one's own searching of the literature; the shortest in one's own experience, seven days. One patient lived for six months, three about four months, and others, for shorter periods.*

Our cardiac cripples need sound advice and guidance. Restrictions must not be irksome, but careful hygiene and proper rules of life will do much. The profession can do much to increase public interest in the increasing incidence of heart disease. There is great room for social service work in the providing of special clinics,

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* Sir James Mackenzie writes on this condition of pulsus alternans. "Pulsus alternans is a very grave sign at all times and especially in febrile affections . . . .A patient may go quietly about for years after the appearance of the pulsus alternans but it is usually a sign of an irrecoverable underlying condition." *Diseases of the Heart*, 2nd edition, London, p. 198, 1916. —(Ed.)

the supervision of the lives of children with damaged hearts, and the arranging of proper employment for adults. It would seem to be not too much to hope that service for cardiac cases in public institutions, hospitals, clinics, and social service, may be made to equal that at present provided for those crippled by tuberculosis.

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THE SPECIFIC DUTIES OF MEDICAL OFFICERS OF HEALTH IN DEALING WITH COMMUNICABLE DISEASES*

PART II.—SCARLET FEVER, MEASLES, WHOOPING COUGH, CHICKEN-POX AND MUMPS†

BY JAMES ROBERTS, M.D.

Medical Officer of Health for the City of Hamilton, Ont.

SCARLET FEVER

THE control of scarlet fever as in the case of diphtheria depends mainly upon two factors; first, the early recognition and isolation of mild cases; and second, the supervision for a sufficient length of time of convalescents still harbouring the scarlatinal streptococcus in the secretions of the mouth and nose, or spreading the infection by means of running ears, abscesses or other discharges. In the past two years our knowledge of the cause and treatment of this disease has made greater strides than has been the case in any of the other contact diseases. An important point over which there has been an interminable amount of discussion, and about the relative importance of which epidemiologists have differed widely, has been settled in that the skin is no longer regarded as having a part in the conveyance of the infection. The scales during the period of desquamation are not the medium by which the spread of the virus takes place. It is now known that the mode of transmission is by the saliva or nasal secretions or by articles that have been soiled with such secretions, and by discharges from secondary complications such as adenitis or middle ear disease. Unfortunately we have not, in this disease, as in the case of diphtheria, developed the laboratory detection of the specific organism in cases where it persists for long periods of time, to a degree which will enable us to maintain an effective supervision over these carrier cases. Hence we frequently find in populous centres, cases, when released from hospital, or from isolation in the home, and as far as can be ascertained by physical examination, entirely recovered, immediately infecting those around them. It would appear in fact that the persistence of virulent streptococci in these convalescent cases, and in persons with such complications as otorrhœa and rhinorrhœa is the main factor in keeping scarlet fever alive through the summer months and giving rise upon the opening of schools in the autumn to the seasonal prevalence of the disease. Scarlet fever is not so readily communicated as diphtheria, measles, whooping cough or the minor communicable diseases, and in the administrative control of the disease the fact that the incidence of infection after exposure is only about 20 to 30 per cent must be taken into consideration.

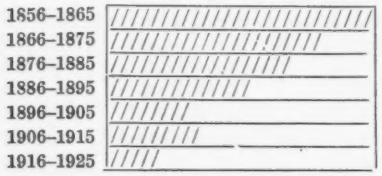
Clinical trials of the scarlet fever antitoxin in both hospital and private practice indicate that this new product is likely to be as important in the control of scarlet fever as antitoxin has been in diphtheria, and is to be regarded as one of the important recent advances in preventive medicine. On account of

* Read before the Ontario Health Officers Association, June, 1927.

† Part I.—Smallpox, Typhoid Fever, Diphtheria. *Canad. M. Ass. J.*, Oct., 1927, xvii, 1178.

the disease being much less readily communicable than diphtheria or smallpox, however, it is debatable whether hospitalization is to be generally advised for the milder cases. The fact, which is well known to every physician of experience in handling contagious diseases, that many children exposed to scarlet fever and apparently susceptible, do not take the disease has been again called to the notice of the health officer by Dr. Clendennin, who reports that among a series of 107 cases of scarlet fever occurring in 96 houses, there was only a single case in 86 of these houses, 2 cases in 9 houses and in only one house were there 3 cases. In the 86 houses where only single cases appeared there were 249 children in all under 15 years of age with a history of not having had scarlet fever. For 1924 and 1925 he made a study of the incidence rate in houses of from one to eight rooms and compared this with the incidence rate for houses where cases were removed to hospital. The results of his observations during this period of two years did not indicate that crowding had any effect on the attack rate. Hospitalization of his cases was avoided as much as possible and removal advised only when effective treatment could not be carried out at home. The conclusions of Dr. Clendennin are confirmed by Dr. Garrett, medical officer of health of Cheltenham who in an experience of 35 years finds that though opportunity for contact in the home may be easy, scarlet fever is often limited to a single case.

One of the most astonishing facts connected with the history of scarlet fever is the great reduction in the mortality during the last 70 years. This is pointed out by Chapin in the annual health report of the City of Providence for the year 1925, where the death rates from 1856 to 1925 per 100,000 living are tabulated,



Before leaving the subject of scarlet fever it may be in order to say a word or two concerning the relationship of milk supplies to the control of typhoid fever, diphtheria, scarlet fever and septic sore throat, and to emphasize the necessity for the effective pasteurization of this important food commodity. The first milk epidemic of which there is any record was reported from the City of Penrith in England by Taylor in 1857. Ten years later an outbreak of scarlet fever was traced by the same author to this source. Other epidemics were reported from time to time, but not sufficient to attract the attention of public health authorities until 1881 when Hart published his collection of milk epidemics. Since that time there have been gathered together more than 500 epidemics of typhoid fever, septic sore throat, scarlet fever and diphtheria transmitted by milk.

Kelly and Osborne made a study of twenty-eight outbreaks occurring during four years in which milk was found to be the cause, or in which the evidence pointed to it as the only factor producing the disease. Of the 28 outbreaks due to milk, 16 were typhoid fever, 7 septic sore throat, only 4 were scarlet fever and one diphtheria. It will be seen therefore that while milk as a causative factor in the spread of scarlet fever is not as liable as in the spread of typhoid fever and septic sore throat, adequate precautions must be insisted on to ensure that it does not become contaminated with the germs of this disease.

Concerning the Dick test and active immunization against scarlet fever Zingher states that the test is a reliable index to the susceptibility of individuals to scarlet fever, and the serum if employed for immunization in sufficient doses may help in solving the problem of the control of this disease. It would appear, however, that a single negative reaction is not always to be relied upon as an indication of immunity. The doses recommended by Zingher for children under 12 years of age, namely 100, 250 and 500 S.T.D. at intervals of one week, have been found to be ineffective. In one batch of 1,500 children so treated, the Dick test reapplied 2 or 3 months later, showed 50 per cent of positive reactions, indicating that no immunity had been developed. Another series of tests of 3,000 cases in which 1,000, 2,000 and 4,500 S.T.D. were used, showed 50 per cent still susceptible after a period of six weeks. The tendency now is to use still larger doses, the Dicks themselves

advocating doses as large as 20,000 S.T.D. which amounts however, sometimes cause reactions which resemble attacks of scarlet fever. It is not known how long immunity produced by the toxin injections will last, but Park of New York as a result of his findings, has given reasons for believing that an immunity of 18 months to 2 years may be produced. There seems to be little doubt that as a result of the investigations being carried on, more gratifying improvement in the attainment of immunity will be obtained.

Measles

There is a general unanimity of opinion among those who have had large experience in the handling of epidemics of measles, whooping cough and the minor communicable diseases, that the usually prescribed measures of isolation and quarantine of contacts, exert little or no influence on their control. Outbreaks of a few cases tend invariably to assume larger and larger proportions until a high percentage of the susceptibles in the community have become immunized, but because diseases like measles and whooping cough, once having obtained a foothold, tend to run riot, does not necessarily justify an attitude of indifference on the part of the health officer, nor a neglect of their fatal consequences.

In the registration area of the United States during the 12 years from 1900 to 1911, 50,000 deaths from measles were recorded, and the measles death rate per 100,000 population in the same area varies from 4.3 to 14.3 in different years according to official statistics. Whooping cough causes more deaths than scarlet fever. In the United States registration area from 1900 to 1921 the average mortality rate was about 10.5 per 100,000 population.

Measles is almost universally looked upon as a trivial complaint, but ranks second among the communicable diseases, while whooping cough comes fourth as a cause of death; and if we could obtain reliable statistics regarding the true cause of the numerous deaths in young children, ordinarily attributed in mortality statistics to broncho-pneumonia, the responsibility of these two diseases for the high death rate from respiratory affections occurring in children between 1 and 5 years of age would be materially increased. Complications and sequelæ occur in one-fourth to one-fifth of all cases, so that in the registration of vital statistics the original disease frequently receives no mention. The younger the child and the younger the family the higher the death rate is likely to be. The social condition of the parents exerts an influence on both the age at which an attack may be expected and on the mortality rates, since better homes imply better care for children, and the restriction of the child more to its own family or within narrower limits. Among such families the average age for the occurrence of measles is about seven or eight, while among the working classes it is under five, below which age the majority of the complicating bronchopneumonias make their appearance. When whooping cough or measles breaks out in a family of small children, a well trained intelligent public health nurse is invaluable and is able to exert her maximum of influence, and prevent many of the baneful consequences so liable to follow these diseases, by keeping in touch with the physician or health officer when necessary, by informing the mother as to their seriousness, by seeing that the child is kept in bed under hygienic conditions, and by assisting with bedside care when such is required.

Among the general measures for the control of measles and whooping cough notification obviously comes first, since it is impossible for any attempts at control to be successful, in the absence of knowledge where disease exists. Information with respect to cases or even suspicious cases should be accepted from all available sources, physicians, householders, public health nurses and teachers of the elementary schools. In measles the great difficulty encountered is the onset of the disease, which is characterized by symptoms which simulate a common cold. A superstition of the general public that has to be overcome is the widespread opinion that every child must have the disease, and the sooner the trouble is over the better—a consoling reflection for the parents, but of doubtful use so far as the health of the neighbouring child is concerned. Isolation, quarantine of exposed susceptibles and concurrent disinfection are as important in this affection as in other communicable diseases. Schools should not be closed, or classes discontinued, where daily observations by a doctor or a nurse can be provided. Mothers should be warned of

XUM

the danger of having young children come in contact with those suffering from acute catarrhal conditions of any kind. The use of whole blood of convalescent patients in measles or of healthy immune adults within five days after exposure, will avert or modify an attack in an exposed person in a large percentage of cases and this procedure is of value in checking the spread of infection in institutional outbreaks.

It is the duty of the health officer to realize how important hospitalization and appropriate treatment of the serious cases of measles, scarlet fever and diphtheria has become. This is shown by the records of the Willard Parker Hospital in the management of these three diseases for the first three months of 1927 as contrasted with the first three of 1922.

1927

	Cases	*Deaths*	*Mortality Per Cent*
Scarlet Fever	334	8	2.3
Diphtheria	407	33	8.1
Measles	15	2	13.3
Total	756	43	5.6

1922

	Cases	*Deaths*	*Mortality Per Cent*
Scarlet Fever	499	128	25.7
Diphtheria	236	35	18.8
Measles	488	114	23.3
Total	1,223	277	22.3

Whooping Cough

In the control of whooping cough, the chief difficulty in limiting the spread of the disease is undoubtedly the missed cases of a mild type in which the disease only assumes the catarrhal stage, and in which the characteristic whoop is not developed. Convalescent carriers are not considered a serious factor in its spread. It is stated that a positive diagnosis of the causative germ may be made by bacteriological examination of the discharges from the larynx one week before the development of the whoop. In addition to quarantine, isolation and concurrent disinfection, some authorities recommend the vaccine as a prophylactic against the spread of whooping cough. Miller, formerly Director of the Division of Communicable Diseases, Health Department, Akron, Ohio., says:—

"Experience seems to show that sufficiently large doses of Bordet bacilli establish a positive immunity against whooping cough and check the spread of the disease in the public schools."

In whooping cough the communicable period does probably not last longer than three weeks after the characteristic whoop, so that in instituting measures for its control the communicable period must be regarded as extending from seven days after exposure to an individual who has the disease, to three weeks after the appearance of the characteristic whoop.

German Measles, Chicken Pox and Mumps

German measles, chicken-pox and mumps, are widely prevalent in cities during the winter and spring months, but are not attended by mortality and do not give rise, excepting in the case of mumps, to complications worthy of serious attention. Both German measles and chicken-pox constitute, however, a problem of some concern to the health officer and necessitate an amount of supervision entirely out of proportion to their real significance, by reason of the liability of German measles to be confused with morbilli on the one hand and with scarlet fever on the other, and of chicken-pox to be mistaken for small-pox.

Since the opening of schools in Hamilton on September 1, 1926, there have been reported to the Department of Health about 1,000 cases of chicken-pox alone of school age and an additional one thousand among pre-school children. If the average number of contacts quarantined for the individual case be taken as one, with an average absence from school of ten days each for patient and contacts, the incidence of this trivial malady during the past eight months represents a loss of school attendance totalling in one city alone, 20,000 days, a huge economic loss to the community, which is equalled during visitations of German measles and mumps, and for which the time and energy consumed by the health officer and his assistants, in enforcing existing regulations with regard to their control would seem to obtain but few compensating advantages.

Influenza and Pneumonia

It is impossible to estimate the true value of the practices in vogue for dealing with such respiratory infections as influenza and pneumonia, or of disease like poliomyelitis and epidemic meningitis. In epidemic meningitis we are assisted in the recognition of the disease by the use of the microscope for examination of the spinal fluid and of the nasal

and pharyngeal secretions. Carriers in this disease vary from 1 per cent in the general population, to 80 per cent of those known to have contact with the disease among military units. Our ignorance of the epidemiology of the disease, the presence during outbreaks of large numbers of carriers, and the existence of mild and undetected cases make the problem of the administrative control of meningitis very difficult. The isolation of so-called meningitis carriers has been barren of effective results, and we are forced in this disease to rely on general measures, such as improvement in ventilation, the prevention of crowding in such places as camps and military establishments, education in personal hygiene, avoidance of bodily fatigue and excess in eating and drinking, and the utilization of measures for the promotion of general health. The meagre knowledge which we possess of the cause and mode of transmission of infantile paralysis renders us as helpless in the presence of this disease, as in epidemics of meningitis. The epidemic of poliomyelitis in 1916 typically exemplified our inability to account for the spread of the contagion or to devise measures for its control. Contact, insects, milk, air, street dust and animals have been evoked as the medium for the carriage of the virus, but at the present time we cannot demonstrate that any one, any two, or all combined can account for the eccentricities of this disease. Until accurate information is forthcoming as to the manner in which the disease is transmitted, health authorities are justified in requiring notification, isolation, quarantine and concurrent disinfection of all materials freshly contaminated by discharges from the nose, throat or bowel of infected persons.

Notification, isolation and quarantine of infected persons in acute respiratory infections such as pneumonia and influenza would appear to be of little avail in lessening the spread of infection, but since proper treatment at the outset in bed is desirable in all cases and hospitalization of the serious cases is demanded, as an assurance of their receiving prompt and suitable treatment, it is the manifest duty of the health officer to obtain as complete a record as possible of all cases through the maintenance of a bureau of information and also through the medium of his staff of doctors, nurses and voluntary workers. Only by means of such a record will it be possible to make sure that all those infected are advised as to the necessity for treatment in the initial stages of the disease and that adequate medical, nursing and hospital service is provided wherever necessary. The pandemic of influenza in 1918 and 1919 fully attests the helplessness of isolation and quarantine. Every kind of restrictive measure which the ingenuity of the medical mind could conjure up, and in some instances every conceivable absurdity, was adopted and pressed ruthlessly into service with no apparent effect in retarding the march of influenza from country to country and from community to community, except to emphasize their futility and our impotence in the presence of this devastating scourge. No definite plan of community protection has been worked out. We certainly have no assurance that quarantine, isolation, or restrictive measures will be more successful in the event of another pandemic than they were nine years ago, but it is conceivable that having benefited by the experience of the past the available resources at our disposal for dealing with a situation such as arose in 1918, may be better organized, and supervised so as to obtain a maximum of efficiency. It may be possible in dealing with certain isolated groups to lessen the number attacked, and to spread the duration of attack over a longer period, thus giving better opportunity for individual care of those infected, and as a consequence lowering mortality even though morbidity rates may be little changed.

The duty of the health officer in the control of tuberculosis has been sufficiently touched upon in the address by Dr. T. W. G. McKay, President of the Association. As this paper is already considerably longer than it was originally intended to be, I shall omit any reference to the control of the venereal infections which belong to another category. Before closing, however, I would like to emphasize the statement that the control of communicable diseases is one of our great community problems, and represents one of the most important duties of the medical officer of health.

This being so, should not the health officer be supported by an organization, financial assistance, and a continuity of service sufficiently satisfactory to enable him to direct his best efforts toward the task imposed upon him?

XUM

THE APPLICATION OF GASEOUS ANÆSTHETICS IN SOME UNUSUAL TYPES OF OPERATIONS AND IN PATIENTS WITH UNUSUAL COMPLICATIONS*

By E. I. McKesson, M.D.

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In Strangulation of the Bowel

After relieving a strangulation of the bowel, there is often much doubt in the mind of the surgeon whether to return the loop into the abdomen or to resect it. The mesentery and gut are frequently very dark and greatly thickened with what appears to be subserous hæmorrhage. If the circulation is cut off, gangrene supervenes, but if circulation is present throughout recovery will take place. How shall the circulation be demonstrated?

It has been my practice for many years to demonstrate the presence or absence of circulation in such a loop of intestine and mesentery by administering pure oxygen to the patient for two or three minutes instead of the mixtures of nitrous oxide-oxygen usually employed as the anæsthetic in such cases. The surgeon watches the colour of the gut without handling. If its colour definitely changes from black to a lighter red and no areas are found which retain the black or grayish purple appearance, circulation is present and recovery of the bowel may be expected. To further aid the patient, if the intestine is greatly distended but no resection necessary, the gas may be removed through a large needle by means of a suction pump. The needle hole is closed by a purse string suture. The removal of this gas further increases the blood supply and permits the gut to retract and to re-establish its peristalsis. Hypertonic saline may be instilled through the same needle if the patient is in a serious condition from the loss of fluids and chlorides, as pointed out by Hayden and Orr.

In a recent case in which the return of colour to the gut after oxygenation was slow and not well marked and in which there was doubt if the patient would survive a resection of about fourteen inches of ileum, the loop was replaced and the patient made an uneventful recovery, showing that even an imperfect or slow circulation sometimes affords a better chance than resection.

It need hardly be mentioned that the surgeon must wait a few minutes for the re-establishment of full narcosis before further manipulation and closure are undertaken.

Anæsthesia Under Pressure

There are a number of conditions in which the anæsthetist may render conspicuous service to the patient and surgeon by the administration of the anæsthetic under considerable positive pressure ranging from five to ten mm. Hg. The following are a few interesting cases from my own experience:—

An ex-soldier of the recent war had a broncho-pleural fistula with marked dyspnœa. He had been operated upon several times without relief, the small fistula not having been located.

Under nitrous oxide-oxygen, two ribs were resected in the right anterior axillary line. The gases were now increased in pressure to five or six mm. when escaping gas could be readily heard within the pleural cavity. The surgeon's hand was passed about over the lung in an attempt to locate the fistula. The finger stopped the escape of gas at the hilus. A wick of iodoform gauze was packed over the fistula and brought out through the incision and closed. Adhesions closed the fistula and the patient was discharged from the hospital within a few days. No further trouble has been reported in the four years that have elapsed since this operation.

Another patient, having a questionable diagnosis of pulmonary tuberculosis and a kidney complication, was being operated upon in whom a peri-nephritic abscess had been opened in the

* Read before the Canadian Association of Anæsthetists, Toronto, June 17, 1927.

loin. During the manipulation, a mucopurulent material emerged from the mouth into the inhaler with some gurgling. About the same moment the surgeon remarked that there was bubbling in the incision. The gas oxygen pressure was increased at once, forcing back the pus which was being aspirated through a fistula leading from a branch of the right bronchus into the abscess cavity. This opening was packed with gauze and the incision closed. Several months later it was reported that the patient had completely recovered from symptoms and that the fistula had closed.

In each of these cases the administration of the gases under pressure made the diagnosis and location of the fistula possible and probably saved the life of the patient.

Pressure in Empyema

The release of pus by rib resection in empyema of the pleural cavity is occasionally followed by collapse or apnœa in a patient *in extremis*. In these cases the inflation of the lung with oxygen under considerable pressure is sometimes life-saving at the moment.

In addition to saving the patient's life the anæsthetist should continue the anæsthetic under enough pressure to fill the lung so as to obliterate the pleural cavity and pneumothorax, thus forcing any loose masses of exudate into the incision. The surgeon grasps each mass with forceps and teases it out through the incision. I have seen masses as large as one's hand removed in this manner, thus shortening the period of convalescence by the time required for the digestion and liquefaction of such materials in the cavity.

It is not necessary nor desirable to administer the gases at such a pressure as will inflate and hold the lung out against the opening but it does require some fifteen mm. Hg. pressure at times to open up a lung which has been compressed for some time. This is accomplished by tightening the pressure-screw on the anæsthetizing apparatus and similarly tightening the expiratory-valve tension on the face inhaler.

I have practised this procedure as a routine in these cases over fifteen years with most satisfactory results to the surgeon and patient. One might fear injury to the lung, but in no instance has there been hæmoptysis following nor any other evidence of damage. When one remembers that the lung will withstand a pressure more than 120 mm. Hg. from within when the chest is open, without rupture, it is not surprising that the 15 or 20 mm. Hg. pressure is well within safe limits. Coughing, for example produces as much as 40 mm. pressure if severe.

Oxygen Therapy, A Field for Anæsthetists

No substance is more important to life than oxygen. The anæsthetist who is administering the gaseous anæsthetics is particularly fitted by knowledge and experience in the use of oxygen. To those who have not made a careful study of anoxæmia, I would recommend the book on *Respiration* by Haldane, published by the Yale University Press. Outside the field of pure anæsthesia, there is no greater opportunity for the anæsthetist to be of inestimable value, and in which he is better qualified to serve, than in the direction of oxygen therapy for certain acute and chronic conditions in which this gas has no equal. While I do not intend to discuss its use in asthma, pneumonia, arthritis, cardiac disease and other conditions with protracted anoxæmia, the work is so new and important to anæsthetists that the description of a case or two outside of anæsthetic practice may be profitable since similar complications may occur on the operating table.

A middle aged woman with auricular fibrillation had been treated with quinidine. Normal rhythm had been restored but a few hours when dyspnœa and unconsciousness suddenly followed, associated with marked cyanosis and respiratory failure. Artificial respiration with pure oxygen, inflating the lungs under pressure, was instituted. After about one hour's treatment, the respirations which gradually improved from the beginning were restored to a satisfactory state. The patient had to be restrained in bed for two or three hours but finally regained consciousness in the morning, some six or eight hours later.

It is presumed that during the auricular fibrillation a blood clot had formed in the heart which, with the restoration of normal rhythm, was carried to the lungs as an embolus, resulting in such marked anoxæmia as to temporarily damage the brain. Although the patient died some weeks later when auricular fibrillation again developed, it illustrated the fact that the proper and prompt administration

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of oxygen gave the patient a chance to live had the heart condition been less serious.

A man about fifty-five was dying from pulmonary œdema of cardiac origin. The pupils were widely dilated; there was an ashy cyanosis throughout, but more marked in the extremities; cold perspiration and no pulse at the wrist. He was supported upright and in the mouth could be seen and heard a slight surging of froth with each respiration. The breathing was gasping in character and slow with very little volume. He was being asphyxiated by this froth. Atropine, etc., had been administered some time before without effect.

The problem here was to rupture the bubbles of froth in order to reach the alveoli with air or oxygen. The anæsthetic apparatus was quickly prepared and oxygen was administered without much effect for a minute or two. Then the thought came to compress the bubbles under sixty to eighty mm. of pressure, while the patient was attempting to exhale and suddenly release the pressure by jerking the inhaler from the face. This procedure was continued for less than five minutes when the colour changed, the pupils contracted, and there was a weak pulse at the wrist. The patient was now able to inhale more efficiently and there was every evidence of improvement. Oxygen without pressure was inhaled for five to ten minutes more when the patient regained consciousness and coughed up a considerable quantity of a clear straw-coloured fluid. Several weeks later he died in a similar attack before help could reach him in his home.

In a similar case, except that the froth was from inspired blood and mucus during a tonsil operation under ether, I was called to resuscitate with oxygen but arrived too late—all efforts at respiration having ceased some minutes before. However, I succeeded in clearing the lungs of froth and blood by the same procedure and I believe I should have been successful in saving the life had the method been applied earlier.

Depression Test

Any one who watches and charts the pulse and blood pressures during major operations is familiar with the variations of the circulation in these particulars. The etiology of some variations is not always clear. For example one finds a falling blood pressure with or without a rise in pulse rate in some cases. At least the rise in rate does not impress one with the degree of depression which may exist, either because the rise in rate is not present at all, or may have occurred at a moment when it was not counted and further depression resulted in a fall in rate. In searching for an explanation and a method for restoring the normal blood pressures and pulse rate, oxygen was administered in larger percentage for the very short period of two or three breaths. In some cases it was found advantageous, while in others it was not followed by improvement in blood pressures. Further observations seem to have shown that when oxygen-increases in the anæsthetic mixture restore or at least increase the falling blood pressures, the fall is due to depression from overdosing with the anæsthetic, regardless of the apparent depth of narcosis as judged by other signs; and when oxygen-increases are not productive of a rise in blood pressure that the depression is probably due to other causes than anæsthetic overdosage.

Since alluding to this observation in a previous paper without giving an adequate description of the technique employed, a number have requested more details which follow:—

When observing a progressive fall in the systolic and, to a less degree, in the diastolic pressure as well, usually accompanied by little or no rise in pulse rate, one may suspect anæsthetic depression. Inflate the blood pressure cuff about 10 mm. Hg. above the systolic pressure then while listening with the stethoscope, suddenly increase the oxygen percentage in the anæsthetic mixture to 50 or even 100 for one or two breaths returning to the old mixture immediately after. If the anæsthetic be responsible for the falling blood pressures, the systolic pressure will be heard at this higher level and may be rather rapidly run up to the normal, or above, for a few minutes, and may be determined by increasing the pressure in the cuff as it rises. While the pressures rise, the pulse rate usually falls if it has been increased or it may rise if it has been slower than usual. Such a reaction to oxygen is thought to be indicative of anæsthetic depression while no improvement in the blood pressure is looked upon as being negative and that the cause is loss of blood or traumatic shock.

This test is of considerable value to the anæsthetist because it is one which may detect depression early when other than the blood pressure gives no evidence of its presence, and at a time when the mechanism for correction and compensation in the patient is still intact. It gives the anæsthetist a means of differentiating between anæsthetic and other forms of depression during operations, which aids him in advising the surgeon as to the patient's ability to withstand further operation in doubtful cases. It aids the anæsthetist in giving a safer anæsthetic in major operations and particularly in those complicated cases in which an operation is fraught with considerable danger to the patient.

Conclusions

In presenting these experiences, I should like to emphasize the importance of the use of pressure in these and similar complications which arise in anæsthesia and to urge the anæsthetist to master the use of oxygen in the operating room and in other fields of medicine in which it is life-saving, because the anæsthetist is at present the only qualified specialist as a rule in the average community to carry it out and direct its successful use in a large way.

COMMERCIAL PHARMACEUTICAL PREPARATIONS*

4.—Hydrastis—Golden Seal

By H. M. Lancaster and A. L. Davidson

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THE examination of samples of commercial preparations of hydrastis was prompted by considerations of the high price of the crude drug and of its increasing scarcity. The collection was made by the inspectors of food and drugs in the districts of Quebec, Montreal, Ottawa, Toronto, London and Winnipeg. In all, fifty-one samples came in, twenty-one of which were tincture and twenty-two liquid extract: and, in addition, eight samples of a preparation commonly called "fluid extract golden seal, colourless".

The ancestral home of Hydrastis Canadensis is the virgin forest of central North America east of the prairie, in moist shady woodland glades, in soil soft and rich and deep. But the gradual clearing of the bush to make way for civilization as well as an unbridled digging up of roots by improvident collectors has well nigh brought about the extermination of the plant in the wild state. The annual consumption of the drug, amounting to some 250,000 lbs. has made its cultivation attractive to farmers in Canada and in the Northern States, but the plant is not one of the easiest to propagate, for the natural conditions must be duplicated as nearly as possible to ensure success. In keeping with what might be expected, the high price has invited a good deal of adulteration and substitution and of the appearance on the market of material of inferior quality. Indeed, according to Lloyd[1] every drug native to the soil which resembles the rhizome of golden seal either in fibre or in colour has been used as an admixture or as a substitute.

Beyond stipulating a generous limit of not more than 11 per cent of ash, the British Pharmacopœia[2] does not prescribe any standard for Hydrastis Rhizoma. That of the United States,[3] on the other hand, not only limits the proportion of extraneous matter, but also requires at least 2.5 per cent of ether soluble alkaloids to be present. Judging from the following yearly records[4] covering the period from 1914 to 1919, in which no sample fell below 2 per cent of ether soluble alkaloids, there does not appear to be much excuse for weak preparations of this drug.

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* This is the fourth of a series of papers on this subject. 1.—Nux Vomica, *Canad. M. Ass. J.*, July, 1927, xvii, 803-807. 2.—Belladonna Root, *Ibid.*, Aug., 1927, xvii, 923. 3.—Belladonna Leaves, *Ibid.*, Oct., 1927, xvii, 1187.

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Year	*Ether*	*Soluble*	*Alkaloids*
1914	3.22	3.42	3.32
1915	3.16	3.98	3.63
1916	2.15	5.59	3.83
1917	2.65	3.86	3.29
1918	3.94	4.47	4.20
1919	2.97	4.06	3.64

Moreover, Viehoever,[5] after examining numerous samples of the 1917 and 1918 crops taken from all over the United States, found that very few contained less than 2.5 per cent ether soluble alkaloids and actually recommended a raising of the standard to 2.75 per cent.

Hydrastis contains three alkaloids, hydrastine, berberine and canadine, or tetrahydroberberine: the proportion of the last is quite small. Hydrastine is soluble in ether whilst berberine is comparatively insoluble and yields an insoluble hydriodide on treatment with potassium iodide. The British basis of appraisal for hydrastis preparations is the alkaloid hydrastine, which is separated by precipitation of berberine and possible canadine, and extracted with ether in the usual way. In the United States, the separation is made by selective extraction alone.

No unique features present themselves in the manufacture of liquid extract of hydrastis.[6] Supplementing the Pharmacopœial standard of from 1.9 to 2.1 per cent hydrastine, Squire[7] states that the B.P. product has a specific gravity of 0.990–1.012 and contains about 19 per cent total solids. The official tincture[8] is a 1 in 10 dilution of the liquid extract and must contain between 0.19 and 0.21 per cent of the principal alkaloid. According to Squire[9] the specific gravity of this preparation should be about 0.920 and the extractive about 1.8 per cent. Tincture of hydrastis is no longer official in the United States.

The Holland Pharmacopœia Commission[10] has discovered a relation between the proportion of

TABLE A
LIQUID EXTRACT OF HYDRASTIS

No.	*Labelling*	*Appearance*	*Specific Gravity*	*Percentage of Total Solids*	*Percentage of Hydrastine*	*Percentage of Discrepancy from B.P. 1914*	*Remarks*
1.	Fld. Ext. Golden Seal..	Brown: clear	0.984	11.17	1.43	−28.5	Decidedly weak.
2.	Fluid Extract Hydrastis U.S.P.	Brown: turbid	1.026	21.28	1.99	—	Pass as B.P. 1914. S.G. that of U.S.P.
3.	Extrait Fluid Hydrastis	Brown: clear	1.032	21.61	2.29	+14.5	S.G. that of U.S.P.
4.	Fl. Ext. Hydrastis.....	Brown: slightly turbid	1.026	20.89	1.74	−13.0	S.G. that of U.S.P.
5.	Fl. Ext. Hydrastis.....	Brown: slightly turbid	1.016	19.81	1.87	− 6.5	Close to standard.
6.	Fluid Extract Golden Seal	Brown: bright	0.994	17.03	1.74	−13.0	
7.	Fluid Extract Golden Seal Hydrastis U.S.P...	Brown: bright	0.998	18.78	1.56	−22.0	
8.	Extrait Fld. Hydrastis	Brown: bright	1.019	10.52	1.00	−50.0	Error in adjustment?
9.	F. E. Hydrastis.....	Brown: bright	1.010	14.21	1.27	−36.5	Decidedly weak.
10.	Fluid Extract Golden Seal, Hydrastis Canadensis	Brown: dark: thick	1.017	23.80	2.08	—	B.P. 1914.
11.	Fl. Ext. Hydrastis.....	Brown: deposit: thick	1.006	17.10	1.58	−21.0	
12.	Fluid Extract Golden Seal	Red-brown: bright	0.893	8.43	1.23	−38.5	Decidedly weak: odour of methyl alcohol.
13.	Ext. Hydrastis Fluid..	Brown: clear	1.009	11.72	0.97	−51.5	Error in adjustment?
14.	Fluid Ext. Hydrastas..	Brown: turbid	1.028	23.26	1.98	—	Pass as B.P. 1914. S.G. that of U.S.P.
15.	Liquid Ext. Hydrastis B.P.	Brown: cloudy	1.026	14.53	1.69	−15.5	S.G. that of U.S.P.
16,	Fld. Ext. Hydrastis....	Brown: fairly clear	1.023	12.89	1.22	−39.0	Decidedly weak.
17.	Liq. Ext. Hydrastis B.P.	Brown: clear	1.042	22.70	1.86	− 7.0	Close to standard. S.G. that of U.S.P.
18.	Fl. Ext. Hydrastis.....	Brown: clear	1.022	20.33	1.91	—	B.P. 1914.
19.	Fluid Extract Hydrastis B.P.	Brown: clear	1.038	17.17	1.41	−29.5	Decidedly weak.
20.	Same as No. 10.....	Brown: bright	1.007	11.43	1.25	−37.5	Decidedly weak.
21.	Fluid Extract Hydrastis	Dark brown sediment	1.070	25.71	1.85	− 7.5	Close to standard.
22.	Liquid Extract Hydrastis	Brown: cloudy	1.023	20.47	1.91	—	B.P. 1914. c.f. No. 18.

hydrastine and that of extractive in the liquid extract and places the ratio between 1:9 and 1:11. Van Itallie thinks 1:8.5 more nearly correct. Naturally the proportion will depend to some extent upon the relative amounts of root and rhizome in the raw material, for the ratio of ether soluble alkaloid in root to that of rhizome is 1:1.8. A fluid extract prepared from rhizome does not deposit on keeping whilst one from root throws out quantities of berberine and phytosterin. The ratio is helpful in giving some indication of the quality of raw material employed and it is interesting to examine our results in the light of these facts. For years American pharmacists have employed 10 per cent of glycerin in the manufacture of fluid extract.[11] Blomberg[12] reports having made liquid extract of hydrastis both with and without glycerin and having found that the glycerinated material was more efficient and concentrated than the other. The U. S. P. process gave a product assaying 3.2 per cent of hydrastine, whilst that prepared from alcohol alone contained only 2.6 per cent. Blomberg contends that glycerin has a special action on cell walls and thereby permits the alcohol to extract the alkaloids more completely.

The results of our work, as displayed in the tables that follow, reveal that there is abundant room for improvement in commercial preparations of golden seal. Of twenty-two liquid extracts, five (23 per cent) are correct, three are within 10 per cent and six between 10 per cent and 25 per cent of the standard, whilst eight are quite wide of the mark. Only one-seventh of the twenty-one tinctures comes within the prescribed range, a fourth is not far off, and the remainder have to be condemned.

Perhaps some of the preparations have never been standardized at all. The crude drugs may

TABLE B
TINCTURE OF HYDRASTIS

No.	Labelling	Appearance	Specific Gravity	Percentage of Total Solids	Percentage of Hydrastine	Percentage of Discrepancy from B.P. 1914	Remarks
1.	Tinct. Hydrastis.....	Golden brown	0.926	1.81	0.148	-26.0	Decidedly weak.
2.	Teint. Hydrastis B.P. 1914	Excellent: orange brown: brilliant	0.924	2.27	0.206	—	B.P. 1914.
3.	Teint. Hydrastis Canadensis B.P.....	Reddish brown: clear	0.922	2.76	0.169	-15.5	
4.	Tr. Hydrastis, U.S.P...	Brown: sediment	0.916	4.20	0.266	+33.0	33 per cent below specification. Solids high.
5.	Tr: Hydrastis, B.P., not filtrate.....	Brown: sediment	0.906	4.40	0.217	+ 8.5	Solids high.
6.	Tincture of Hydrastis.	Brown: clear	0.925	2.59	0.197	—	B.P. 1914.
7.	Tinct: Hydrastis, B.P.	Golden brown: bright	0.917	1.18	0.091	-54.5	Poor.
8.	Tr: Hydrastis.....	Golden: bright	0.844	1.62	0.145	-27.5	Decidedly weak, alcohol too strong.
9.	Teinture Hydrastis U.S.P.	Golden brown: brilliant	0.943	2.27	0.160	-20.0	60 per cent below specification. Alcohol low.
10.	Tinct. Hydrastis.....	Golden brown: bright	0.921	1.77	0.144	-28.0	Decidedly weak.
11.	Tr. Hydrastis.....	Golden: bright	0.955	1.34	0.103	-48.5	Error in adjustment? Alcohol low.
12.	Tinct: Hydrastis B.P. '98	Brown: fairly clear	0.946	1.92	0.152	-24.0	No standard.
13.	Tincture Hydrastis....	Golden brown: slightly turbid	0.919	1.59	0.112	-44.0	Poor.
14.	Tr: Hydrastis.....	Orange brown: clear	0.911	1.67	0.073	-63.5	Very poor.
15.	Tinct: Hydrastis.....	Brown: sediment	0.927	2.32	0.183	- 8.5	
16.	Tinct: Hydrastis.....	Brown: bright	0.924	2.54	0.209	—	B.P. 1914.
17.	Tr: Hydrastis.....	Golden: bright	0.882	1.08	0.124	-38.0	Decidedly weak, alcohol strong.
18.	Tincture Hydrastis....	Yellow brown: deposited	0.985	6.67	0.111	-44.5	Poor: solids very high. Alcohol very low.
19.	Tincture Hydrastis....	Brown: deposited	0.899	2.23	0.090	-55.0	Very poor.
20.	Tincture Hydrastis....	Orange brown: sediment	0.922	2.13	0.174	-13.0	
21.	Tr: Hydrastis.....	Golden brown: bright	0.923	2.23	0.140	-35.0	Decidedly weak.

TABLE C
"FLUID EXTRACT" GOLDEN SEAL, COLOURLESS

No.	Labelling	Specific Gravity	Residue at 105 C. Percentage w/v (glycerin and solids)	Percentage of Hydrastine	grs. per fluid oz.	Maker's specification grs. per fl. oz.	Remarks
1.	Fluid Extract, Golden Seal, Colorless	1.147	45.4	0.23	1.00	1.25	20 per cent short.
2.	Liq. Ext. Hydrastis ...	1.150	—	0.28	1.22	no strength specified	Sold as liquid extract of hydrastis.
3.	Fluid Golden Seal	1.114	30.0	0.27	1.18	no strength specified	Odour slightly butyric.
4.	F. Ext. Hydrastis Canadensis	1.127	36.6	0.25	1.09	1.25	Sold as colourless.
5.	Same as No. 1	1.150	46.1	0.29	1.26	no strength specified	Satisfactory.
6.	Ext. Hydrastis	1.160	46.4	0.26	1.14	no strength specified	Rancid butyric odour.
7.	F.E. Golden Seal, colorless	1.142	—	0.24	1.05	1.25	Weak.
8.	Same as No. 1	1.124	40.4	0.26	1.14	1.25	Weak.

have been bought to specification and the sellers trusted by the manufacturers who in turn believe they have faithfully performed their duty, albeit without scientific control either of product or of manufacture. Again, deterioration may have taken place for some of the preparations are allegedly quite old, as for example, tincture No. 12, which was supplied by a very large department store. Kunze[13] found one sample of liquid extract containing 2.86 per cent of hydrastine had fallen to 2.19 per cent in a year and suggests as a remedy the use of stronger alcohol and the addition of 0.1 or 0.2 per cent of tartaric acid to ensure the alkaloids remaining in solution. This is especially wise in cases where manufacturers think tap water is good enough in spite of the official instruction to use distilled water. It is interesting to observe that in 1914, the compilers of the British Pharmacopœia raised the menstruum for the liquid extract from 45 to 60 per cent alcohol.

Fluid Extract Golden Seal, Colourless

Most manufacturing houses, in classifying such preparations as "fluid extract golden seal, colourless", under the title of fluid extract, make a note that they are arranged thus only as a matter of convenience and that they are not true fluid extracts, but merely solutions. Where a strength is specified, it is usually 1¼ grains of hydrastine per fluid ounce. A formula for a preparation of this kind appears in the National Formulary[14] under the name Liquor Hydrastinæ Compositus and contains 0.3 per cent of hydrastine hydrochloride (equivalent to 0.274 per cent hydrastine or about 1¼ grains per fluid ounce.) A writer in the *Journal of the American Medical Association*[15] reports that "colourless" hydrastis and non-alcoholic preparations are quite variable.

That this preparation was supplied when liquid extract was asked for reveals a great deal of ignorance on the part of retail druggists. This statement is confirmed by some of the prices asked. The catalogues quote $5.30 per fluid pound for the colourless preparation and $18.00 for the liquid extract. Sample No. 2, labelled Liq. Ext. Hydrastis, cost $1.00 for 23 c.c., whilst for two ounces of liquid extract, No. 11 a rate of 25 cents per ounce was charged, involving the vendor in a loss by the transaction of $1.75 on the list price.

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THE USE OF PARA-THOR-MONE IN THE TREATMENT OF INFANTILE TETANY

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EVER since the preliminary report made by Collip and Leitch[1] in January, 1925, on the use of a parathyroid extract in the treatment of tetany very few cases have been seen by us until this spring. For instance in 1925 there were two cases, in 1926 two cases, but in 1927 there have been eight cases treated.

Since 1925 there has been considerable improvement in the preparation of the extract and the unit concentration has increased. The present preparation of the extract has been fully described by Collip and his associates.[2] The potency is indicated in units as "one one-hundredth of the amount of extract which will produce an average increase of 5 mg. in the blood serum calcium of normal dogs of approximately 20 kg. weight over a period of fifteen hours." This extract is now standardized and is readily obtainable as Para-Thor-Mone.

The blood for the serum calcium determinations is obtained from the longitudinal sinus and two c.c. is all that is required by the laboratory for this examination. The method of determination is a modification of the Tisdall method as recommended by Clark and Collip.[3]

The average serum calcium in normal blood is from 10 to 11 mg. per 100 c.c., whereas, in infantile tetany the blood serum calcium content ranges from 5 to 8 mg. per 100 c.c. The exact reason for this low calcium content is not fully understood, but the consensus of opinion is that there is a negative balance for calcium in tetany.

It is interesting to note in passing, that Greenwold[4] has done some experimental work which may indicate that there is not always a negative calcium balance.

It may also be stated that the exact rôle that the parathyroids play in infantile tetany is not fully understood, and the exact etiological factors which bring about the change in the salt metabolism necessary to precipitate an attack of tetany are not known. In this connection allow me to bring to your attention that Cameron[5] suggests that the greater incidence of tetany in the spring months in continental climates is due to the fall of barometric pressure, accompanied by marked sudden rises in humidity and temperature, which are not uncommon at this time of the year, leading to mild alkalosis, which accentuates a latent tetany condition due to some other cause.

The eight cases treated this spring were office patients, so that the rapid method of increasing the serum calcium by giving 5 units every two to four hours as recommended by Hoag[6] could not be used. In this series the patients were given 2 c.c. or 40 units subcutaneously each day. As a rule four injections were sufficient to bring about the cessation of clinical symptoms, even, although at that time the serum calcium had not returned quite to normal.

The eight patients are divided into two groups. The first group consists of three patients in whom the diagnosis was determined by the history, physical findings and blood serum calcium content, but the treatment and progress notes were made by others and sent to me. The second group of five cases were treated throughout by myself.

Group I—Case 1.—Patient was one of twins, born two weeks premature, and weighing 3 pounds, 14 ounces at birth. At one year of age the mother thought he seemed very nervous and irritable, but on physical examination he had active reflexes, but no pathognomonic signs of tetany. Blood calcium was, however, 5.7 mg. He was given 2 c.c. of para-thor-mone and a more varied diet for the age. One week later he was reported to be much improved. He was, by the way, a good example of latent tetany.

Group I—Case 2, aged 10 months, was brought in because he was making a peculiar noise in his throat and it was thought that he had swallowed something. His reflexes were

active, but there were no other signs of tetany. The blood calcium was 7.2 mg. Two c.c. of para-thor-mone were given, diet regulated and four days later he was reported to be much better.

Group I—Case 3, aged 15 months, came in because of "spasms and twitching all over" generally occurring at about 5 a.m. He had a very active Chvostek sign, intense laryngospasm and moderate carpopedal spasm. Blood calcium was 6.5 mg. He was given 2 c.c. of para-thor-mone and instructions were sent to the family physician to give 2 c.c. each day for the three following days. He was reported to be quite well at that time.

Group II—Case 4.—The patient was apparently acutely ill and was said to be recovering from a pneumonia of five weeks' duration; but was brought in because he seemed to be choking, and was having twitching spells every hour through the night. He had fairly intense laryngospasm, marked carpopedal spasm and a very active Chvostek sign. His calcium was 8.0 mg. After 2 c.c. of para-thor-mone each day for four days he was quite a different infant and the calcium content was 9.5 mg.

Group II—Case 5, aged 10 months, was very irritable and cried all night and had a crowing sound in his throat. His Chvostek was slight. Laryngospasm very marked with very active reflexes; calcium 8.5 mg. Two c.c. of para-thor-mone was again given and calcium content was 9.0. He was taken home because there was no further crowing.

Group II—Case 6, aged 7 months had convulsions daily for one week and made a noise as "though he had whooping cough." He had frequent holding breath spells and seemed very nervous. On examination he had fairly marked carpopedal spasm and reflexes. Calcium 6.0. After four daily injections of para-thor-mone calcium was 9.4 and physical signs and symptoms had disappeared.

Group II—Case 7, aged 11 months; was very irritable; had a convulsion after the slightest disturbance and made a choking sound in his throat. Examination revealed a marked Chvostek sign and laryngospasm with slight carpopedal spasm and fairly active reflexes; his blood calcium amounted to 5.7 mg. He was given para-thor-mone, 2 c.c. daily for four days. On the second day his calcium was 6.2 mg. and on fourth day 7.0 mg.

Group II—Case 8, was an extremely interesting one. He was 9 months of age and weighed 19 pounds, 11 ounces. He celebrated his first visit by having a convulsion in the waiting room, with such marked laryngospasm that another patient kindly suggested whooping cough, and he was given a wide berth. His first convulsion occurred two months ago, and the attacks had been recurring with increasing frequency until he was averaging about six a day. For nearly a week the mother had noticed a peculiar shape to the hands and also wondered why it was that he could not close his fingers to hold his toys. It was also noticed that even although circumcised he had great difficulty in urinating. The bowels were always slightly constipated.

On physical examination he was found to be a very severe case of tetany. His hands and feet were fixed in the carpopedal spasm position. The Chvostek sign was so acute that the slightest tap on the facial muscle produced a very marked contraction on that side. His reflexes were hyperactive and any slight unusual stimulation produced a general convulsion. His serum calcium was 5.9 mg. He was given 2 c.c. of para-thor-mone, and did not have any more convulsions. On the following three days he was given the regular 2 c.c. of the extract. At the end of this time there was moderate improvement in the clinical symptoms, and the calcium content had increased to 7.2 mg. As the next day was Sunday no para-thor-mone was given, and on Monday the clinical symptoms were nearly as severe as at the beginning of treatment, also the serum calcium had slipped back to 6.8 mg. At this stage it was thought advisable to assist the retention of calcium by giving 15 gr. of calcium chloride per day while the daily injections of para-thor-mone were also continued. After three days there was again moderate improvement but the patient still showed marked evidence of tetany. On the fourth day, the gums were lanced and from then on, improvement seemed to be more marked. Three days later the para-thor-mone and the calcium chloride were discontinued, and on reporting four days afterwards the patient showed only the very slightest evidence of tetany and the serum calcium was 7.5 mg.

The above patient was the only one in which any medication was used other than the para-thor-mone. The extract was given alone in order to demonstrate its action and value in increasing the serum calcium. In all cases, however, the diet was somewhat modified; for instance, the total quantity of milk was reduced, and more cereals, vegetables and meat juices added. Following the period of observation it was advised to add lactic acid to the milk and also suitable doses of cod liver oil and calcium chloride. The improvement in clinical symptoms and the return of serum calcium to normal levels would probably have been hastened if some form of calcium and cod liver oil had been administered along with the para-thor-mone from the beginning.

This small series of clinical observations does, however, show that para-thor-mone given subcutaneously at daily intervals increases the serum calcium and exerts a beneficial effect in infantile tetany.

DISCUSSION

A discussion followed the reading of this paper and Dr. Leitch replied to the several questions as follows:

In answer to Dr. Smith's query about calcium from the blood, that is quite right. Bones are not the only organs from which calcium is taken. It is also taken from the kidneys and muscles.

In answer to Dr. Ross, there is practically very little danger in getting hypercalcæmia when giving only one dose a day. In his experience he found that after giving an injection of para-thor-mone there would be a gradual accumulation of calcium in the blood, depending on the size of the animal, up to 15 hours. After 15 hours the serum calcium rather rapidly came down again, so that I am inclined to think that if you could see patients 15 hours apart and give 1 c.c. at a dose it would be the better treatment than to give 2 c.c. once a day. I think we could give larger doses. I have occasionally given 5 c.c. at a time just for the one dose and they showed no untoward effects for the one dose and no untoward effects developed. The first symptom of hypercalcæmia is vomiting followed by evidence of collapse.

In reply to Dr. Tisdall, I intended to mention if I did not, that I gave that particular child 15 grains a day, three times daily with five grains at a dose. One can raise the blood calcium content more quickly by giving small doses rapidly. That can easily be controlled so that when calcium gets up near normal you may stop.

I also agree with Dr. Tisdall that it would be much better to give these infants from the start, cod liver oil and calcium. The reason I did not do this this year was to find out exactly what would happen in not giving any other medication. I wanted to find out exactly, if I could, how rapidly the para-thor-mone in this particular dose would raise the serum calcium.

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Etiology of Headache. — G. Peritz (*Med. Klinik*, August 5th, 1927, p. 1169) classifies the causes of headache as organic, including cerebral tumours, meningitis, hydrocephalus, and syphilis, and, secondly, functional disturbances, such as overwork, fatigue, anæmia, gout, endocrine irregularities, obesity, intoxications, and reflected pains. In the first group the pain is not localized but distributed over the head, sometimes beginning suddenly with intense severity. It depends on the sudden or gradual (in case of tumours) increase of the intracranial pressure; sooner or later the signs of intracranial disease become manifest and are diagnosed. This form of headache is often relieved by the lumbar puncture performed for aid in diagnosis. The headache of syphilitic origin is of two kinds: the one markedly localized in the bones and periosteum, and often the result of irritation of the nerves of the meninges; the other form is indistinguishable from functional headache, and probably also arises from a slight degree of meningitis. Functional headaches are myalgic and not of cerebral or meningeal origin. Myalgia is a partial muscular contraction, and the degree of pain is inversely proportionate to the resistance of the nervous system. The muscular contraction causes a production of lactic acid, which, if the oxygen supply is insufficient to convert it into glycogen and carbonic acid, is not removed from the muscle and myalgia results. Fatigue after walking is due to the excess of lactic acid produced in the muscles. The headache of fatigue and overwork is the result of excessive production of lactic acid in subjects of poor muscular development. In anæmia the diminished hæmoglobin content of the blood causes deficiency of the supply of oxygen to the muscles, and an accumulation of lactic acid. Similarly in gouty persons the myalgia is caused by uric acid, the normal removal of which is interfered with, inciting contraction of the muscular tissues and myalgia.—*Brit. M. J.*—Oct. 15, 1927.

FOOTBALL INJURIES OF THE KNEE JOINT

By L. J. Austin, M.D., and W. A. Campbell, M.D.

Queen's University, Kingston

THE cases we present are collected almost entirely from the accidents sustained by the Rugby football team of Queen's University during the last four years and refer only to that type of football as played under the intercollegiate regulations.

The most superficial examination of the arrangement of the knee joint clearly shows that its stability cannot be assisted by the shape of the bones in the articulation. The almost flat top of the tibia prevents any sort of hinge or locking mechanism. The stability does in fact rely upon the arrangement of the ligaments and to a certain extent upon the tendons and muscles in the neighbourhood. The ligaments may be classified into three sets:—

1. The internal ligaments, namely, the anterior and posterior crucial.

2. The capsule, reinforced by: (a) the patellar ligament; (b) the posterior ligament of Winslow; (c) the external lateral ligament; (d) the internal lateral ligament.

3. The semilunar cartilages and their coronary ligaments binding them firmly to the tibia.

The crucial ligaments are the main factor in preserving the stability of the knee joint. The anterior crucial passing from a slight depression on the top of the tibia to the postero-external aspect of the intercondylar notch prevents over-extension of the joint. In this it is assisted by the posterior ligament of Winslow, which receives a very important reinforcement from the spread of the semimembranosus insertion. The fact that genu recurvation not infrequently follows paralysis of the hamstrings shows that this addition of strength is perhaps more important than is usually admitted.

The function of the posterior crucial ligament, running as it does from the central portion of the posterior rim of the tibia, upwards, forwards, and inwards, to the anterior part of the intercondylar surface of the internal condyle is not so easy to analyze. It is frequently stated that this ligament becomes tense in flexion, but there is probably no true limit to flexion except the mutual pressure of the structures of the calf and thigh. A ligamentous limit corresponding to the action of the anterior crucial does not appear to be necessary and probably the posterior crucial also becomes tight in full extension and adds its action to the others in preventing over-extension. In definite injuries of the crucial ligaments, which are only seen with extreme violence, or as the result of gunshot wounds, the knee joint becomes very unstable in all directions. An antero-posterior slipping movement between femur and tibia, when the joint is in full extension, is most characteristic and diagnostic of this lesion.

The patellar ligament reinforcing the capsule in front is immensely strong and seldom ruptured; indeed, a fracture of the patellar is much more likely to happen or a rupture of the lower fibres of the quadratus.

The external lateral ligament passing from the external condyle to the head of the fibula is short, round and cordlike, of great strength, and is separated by a narrow space from the capsular ligament itself.

The internal lateral ligament, from the adductor tubercle to the medial aspect of the tibia, is nearly 3½ inches long and ½ inch broad, and is adjusted like a strap on the inner aspect of the capsule . In addition, it is strongly attached to the internal semilunar cartilage and its coronary ligaments.

The semilunar cartilages on top of the tibia help the mechanism of the joint by deepening the articular socket for reception of the rounded surface of the femoral condyles, but as such, cannot afford a very great additional assistance to stability. It is not necessary here to describe the full anatomy of these cartilages, especially as they have but little bearing on the clinical aspect of the cases to be presented.

When the knee joint is fully extended it is in the position of greatest stability with no lateral or rotatory movement. When flexed,

however, it is more relaxed and movements both lateral and rotatory are permitted through a limited range, even in the normal joint. In testing, therefore, for any lateral or undue rotatory movement, the knee should always be placed in full extension while making the observations, if the lesion will permit this position.

We now present for your consideration a few cases illustrating the more serious lesions that have come under our observation.

Case 1.—A. A. This patient sustained an injury to the right knee while playing defensive on the right wing, when an attacking opponent fell across his leg which was braced in a position of full extension. On examination, the knee was full of fluid, very tense and tender, but there was no locking or limitation of extension. When in full extension, pressure on the outside of the knee demonstrated an open and shut movement on the inner side, characteristic of rupture of the internal lateral ligament. X-ray examination was negative. After the swelling had gone down the leg was placed for three months in a plaster cast, but was still unstable after removal. A caliper splint was worn for several months and even then there was a tendency for the knee to suddenly give way on the inner side and let him down. After three years he is walking without discomfort or instability, but the open and shut movement can still be obtained. This case was the most severe in our series, and looking back upon it we feel that it should have been operated upon at the very beginning.

Case 2.—W. B. A., sustained an injury to the right knee while playing defensive on the right wing when an opponent fell with full weight across the outside of his leg while it was extended. He presented a characteristic open and shut movement of the inner side with very little synovitis and not much pain. X-ray examination was negative. The knee was placed in plaster for two months, after which it appeared to be quite stable and he played again with a special support. After one year no abnormal movement can be detected and there is no disability.

Case 3.—H. R. In this case injury was sustained to left knee while playing on the left wing defensive. In this case synovitis was not marked but open and shut movement, indicating rupture of the internal lateral ligament, could be easily demonstrated. The x-ray picture was negative. The case was treated for two and a half months in plaster. On examination seven months later, there was marked improvement with no pain and no fluid, but still a slight open and shut movement on the inner side. He has decided to play no more.

Case 4.—C. McC. In this case injury was sustained to left knee while acting on the defensive. Very marked synovitis and the usual open and shut movement were present. An x-ray picture was negative. The leg was placed in plaster for two and a half months but recovery was delayed by severe wasting of muscles. This had not been noticed in any of the other cases of this series. By the end of nine months no lateral movement could be detected. The knee appeared perfectly strong and the wasting had recovered.

Case 5.—A. H., sustained an injury to left knee during a flying tackle. He showed rupture of internal lateral ligament with very little synovitis. X-ray was negative. The treatment consisted in plaster for three months. After one year there is no disability and no abnormal movement.

Case 6.—G. H. In this case injury was sustained in a flying tackle. On examination very little synovitis, but well marked open and shut movement. This patient was not under my personal care, but I was able to inspect him about one year later, and found that his joint had not recovered full stability. In spite of repeated attempts, he was never able to keep the field for more than a few minutes during the next two seasons.

Case 7.—J. McK. Injury was sustained in a very severe flying tackle. Synovitis was well marked, and there was more intense pain in this case than in any of the others, but no lateral open and shut movement could be detected. The skiagram was negative. The diagnosis was never fully established and, though we have no definite proof, we suspect this to have been a case of sprain of the crucial ligament. The knee remained weak, and this player was not fit for any sustained work in the next season, and has never entirely recovered.

Case 8.—G. McK. Rupture of the external lateral ligament occurred in this case with open and shut movement on the outer side. This is

XUM

the only one of these that came under our observation, and the recovery was more rapid and more complete than in any of the other types.

Case 9.—B. B. This patient suffered from dislocation of the internal semilunar cartilage with recurrent synovitis, wasting and locking. As he is not improving, an operation will have to be performed.

Treatment

In all cases of simple traumatic synovitis, bruises, and direct hits, without evidence of rupture of a ligament, we have tried the following measures:—

A. Massage.

B. Diathermic penetration.

C. Infra-red rays.

D. Static spark from a Wimshurst machine.

At present we start all the cases with the static spark for about five days, and find that the redness, swelling, and fluid disappear more rapidly under this line of treatment than any other. This is followed by massage and movements.

All cases with lateral ligament injury we have treated as fractures, placing them in a plaster cast for not less than two months after the first swelling has been reduced. The results are on the whole satisfactory, but the question of open operation on severe internal lateral ligament injury should be considered. Some of our cases we feel sure would have made a more rapid recovery if we had done an open operation with living suture repair.

Conclusions

1. Injury to the knee joint caused more permanent wastage in our team than all other accidents combined.

2. Of the severe injuries to the knee, rupture of the internal lateral ligament is the commonest, and should be treated as a fracture, and it is doubtful whether the patient should be permitted to play again.

3. The prognosis appears fairly good, but there are types that may call for open operation.

4. The injury appears to occur most often while on the defensive, when the knees are braced for resistance.

RODENT ULCER*

By A. Howard Pirie, M.D.

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THERE are three kinds of rodent ulcer that respond to treatment with x-rays, and one which does not. The one least amenable to cure by this method is the ulcer of ten to twenty years' duration, which has eroded so large an area and has extended so deeply that it will not heal, owing to its depth and size. This requires to have a flap turned in to fill up the gap, after the malignancy has been abolished by x-rays. When the area is of moderate extent, the flap has been a success in my experience in two cases, and was a partial success in a third.

The second kind which requires caution in x-ray treatment is one that has been treated elsewhere for months or years by x-rays, and radium. This kind should have at least two months' rest from all treatment, and after that should be treated where malignant tissue remains, as if it had never been treated before. This form of ulcer is usually healed in parts, and disease left in parts. In the treatment of it, the parts that are healed should be covered up with a lead mask, and the diseased parts only should be exposed to x-rays. In making lead masks to fit irregular areas a good plan is to place a piece of celluloid over the ulcer, and with pen and ink to outline on the celluloid the parts to be covered. The celluloid is then laid on the lead and the two are cut with scissors along the ink marks. An exact lead

* Read at the annual meeting of the Canadian Medical Association, Toronto, June, 1927.

mask of the part to be covered is thus easily obtained.

The third kind of rodent ulcer which responds with difficulty to x-ray treatment is one into which the tears run at the inner canthus of the eye.

Since beginning to treat the disease more than twenty years ago, I have formulated some principles for my own guidance, which I would like to hear discussed by others.

I have records of 161 cases which I have treated up to 1926. Unfortunately my work has been divided into four periods in different countries, and as a result I have attempted to follow the cases of the past seven years only. Of eighty-one cases the history of which I have endeavoured to trace, twenty-three did not reply to my letters, twenty-four were returned marked "not known", and only thirty-four gave me satisfactory replies. Of these latter, thirty-two were cured. Of the two uncured cases, one was a large deep ulcer of twenty years' duration and the other was in a paralyzed woman who came once only for treatment.

The report of the cured patients is as follows:—

1 has remained cured for 7 years
7 have remained cured for 5 years
7 have remained cured for 4 years
3 have remained cured for 3 years
8 have remained cured for 2 years
6 have remained cured for 1 year

The duration of treatment of the thirty-two cases reported cured, was as follows:—

6 received 1 treatment
4 received 2 treatments
4 received 3 treatments
5 received 4 treatments
3 received 5 treatments
2 received 6 treatments
2 received 7 treatments
1 received 10 treatments
3 received between 10 and 20 treatments
2 received between 20 and 30 treatments

Of six cases requiring one treatment:—
3 have remained cured after 5 years
3 have remained cured after 4 years

Of four cases requiring two treatments:—
2 remained cured after 4 years
1 remained cured after 3 years
1 remained cured after 2 years

Of four cases requiring three treatments:—
1 remained cured after 5 years
1 remained cured after 3 years
1 remained cured after 2 years
1 remained cured after 1 year

Of five cases requiring four treatments:—
1 remained cured after 6 years
1 remained cured after 5 years
2 remained cured after 4 years
1 remained cured after 2 years

Of three cases requiring five treatments:—
2 remained cured after 2 years
1 remained cured after 1 year

Of two cases requiring six treatments:—
1 remained cured after 4 years
1 remained cured after 3 years

Of two cases requiring seven treatments:—
1 remained cured after 5 years
1 remained cured after 2 years

One requiring 10 treatments remained cured after 1 year.

Of two cases requiring between ten and twenty treatments:—
1 remained cured after 2 years
1 remained cured after 1 year

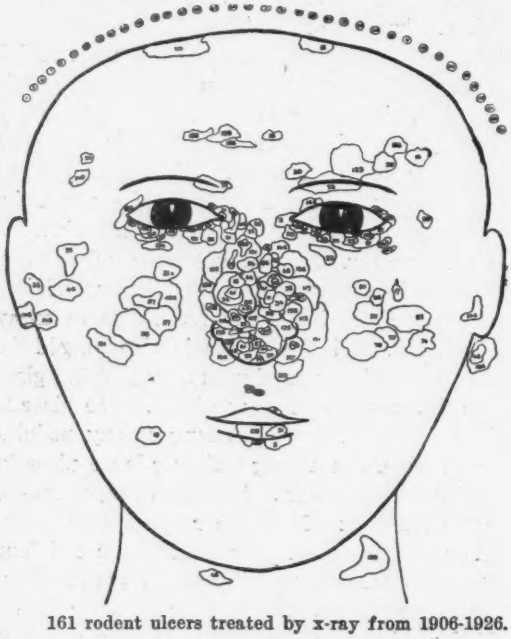
Of two cases requiring twenty to thirty treatments:—
1 remained cured after 7 years
1 remained cured after 5 years

From this analysis it seems that one treatment is an effective way of curing a rodent ulcer. The dose must be a big one. The dose I give is four times an epilation dose, and I have given six and even eight times this amount. No filter is used. I believe many cases would do better if treated in this way than by repeated doses. The latter method involves the risk of spoiling the result by causing a Roentgen ulcer which is mistaken for a rodent ulcer. As soon as a large rodent ulcer is healed the central ulcerated part which has skinned over should receive no more x-ray treatment, and the original edge should be watched and examined with a magnifying glass for the presence of any nodules. The ulcer is healed but not cured, so long as any nodules are visible. In a long resisting large ulcer in which outlying areas of diseased tissue remain, after the bulk of the ulcer has healed, these diseased areas must be treated with a full four epilation dose, provided no treatment has been given previously for two months or more. Under this treatment these nodules may break down and healing will then go on. I have never given 4 S to an ulcer bigger than a quarter of a dollar. A large area will not stand the dose which a small area will. One of the best signs of healing, but one which may alarm a patient, is slight bleeding; this invariably follows the treatment when healing is taking place. One should warn the patient to look out for it and welcome it.

Before a rodent ulcer forms there is present, usually, a small tumour known as a basal-celled epithelioma. This has a shiny surface which I describe to myself as "pearly" in ap-

XUM

pearance. When such an unbroken tumour is treated with x-rays it melts away and leaves smooth shiny skin, without the formation of an ulcer. Four times an epilation dose is the amount for such a tumour. At the edge of some rodent ulcers one sees dilated and blocked pores of the skin. These cases are easily cured as a rule. In some cases it would appear that the ulcer originated owing to the pores being so blocked by secretion and swollen that they press on the intervening tissue and thus cause its destruction, and so form an ulcer which has little malignancy in it. Whether this be so, or not, the fact remains that rodent ulcers with dilated and blocked pores around them heal easily.



161 rodent ulcers treated by x-ray from 1906-1926.

There are many varieties of rodent ulcer. One form is a slow creeping shallow ulcer, which heals at parts and progresses at parts. When it heals, it leaves a depressed shallow scar with an abrupt edge. It is seen mostly about the inner canthus of the eye. Ulcers in this position are hard to heal when tears run into them. In one case when such an ulcer was refusing to heal and was progressing to the inner canthus, I laid a seed of radium on it close to the inner canthus for 48 hours. A violent reaction followed and the ulcer healed.

The diagram shows the positions of rodent ulcers I have treated. It is curious to note that the part where a man shaves is rarely the site of a rodent ulcer excepting the small spot in front of the ear. Multiple rodent ulcers occur in old people, whose skin has a weather beaten appearance. They are preceded by warts. The best treatment is to touch each senile wart with solid carbon dioxide for 25 seconds and treat the rodent ulcers with x-rays in the usual way.

A typical rodent ulcer heals so easily with x-ray treatment that an ulcer which does not respond promptly to treatment should be looked upon as not a basal-celled epithelioma. A biopsy should be made and other treatment instituted. Rodent ulcers are usually so typical that a biopsy is not required.

To measure the dose for rodent ulcer, a barium platinocyanide pastille is placed at the edge of the ulcer, and protected from light by a piece of black paper. When the pastille turns to the B tint as tested by a Corbitt's tintometer the ulcer has received four epilation doses. This is a very exact method and can be used within an error of 5 per cent.

Summary

1. To effect a cure by one x-ray treatment is the ideal form of treatment, but in some cases many treatments may be required before good results are obtained.

2. Nodules at the edge of a healed rodent ulcer indicate that the disease is still present.

3. There are several varieties of rodent ulcer; the senile, the multiple, the creeping, the large-pored, the unbroken basal-celled epithelioma, the too extensive for cure, and the typical rodent ulcer.

Let go of *discouragement*. Talk not of *failure*. Who can even dare to guess what failure is and what is success? Defeat may be grander than victory. To battle well and yet not win, is not tragedy, but triumph. "What men call treasure the gods call dross" (James Russell Lowell). "'Tis not what a man does that exalts him but what a man would do" (Robert Browning). "We must all do not what we will but can, nor have we duty to exceed our power" (Wordsworth). "Who well lives, long lives; for this age of ours shall not be numbered by years, days and hours." (Bartas).—*Nova Scotia Med. Bull.*

A RADIOLOGICAL STUDY OF THE APPENDIX*

By W. H. McGuffin, M.D.

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SIX years ago I read a paper before this Society on "The Radiological Diagnosis of Appendical Disease." Since that time there has been plenty of opportunity to strengthen my convictions upon certain views propounded in that discourse. There are two outstanding points I would like to emphasize:—

1. Any method of examination which will assist in a more accurate diagnosis should be appreciated by all concerned.

2. The clinician should not place the onus for final diagnosis upon the radiologist.

There are two methods of examination: one following the ingestion of the opaque meal; the other following the injection of the opaque enema.

Following the ingestion of the opaque meal. The cæcum commences to fill at three hours and is well outlined from six hours on, depending upon the motility of the intestines. The appendix may therefore be expected to become visualized any time after three hours. From a review of my cases I find the appendix visualized most frequently between twelve and twenty-four hours. No doubt gravity plays a rôle, but the antiperistalsis in the proximal portion of the colon is a large factor in the filling of the appendix. The peristaltic action in the appendix itself takes care of the evacuation.

Certain practitioners, in an effort to save their patients' time and expense, request an examination of the appendix region alone. This can be done by taking a barium meal about eighteen hours before the examination. I am not very favourably impressed by this method. It seems to me to be in the best interests of our patients to have the complete gastro-intestinal tract investigated.

Following the Injection of the Opaque Enema.—At rare times the appendix will fill voluntarily, but more often massage of the cæcum and ascending colon is necessary to demonstrate the appendix and frequently it is impossible to obtain a shadow during the administration of the clysma. Upon innumerable occasions it has been found that the shadow of the appendix was not discernible until after partial evacuation of the opaque enema. This again bears out the peristaltic theory of the filling of the appendix.

Fluoroscopic and Radiographic. Visualization of the Appendix.—Each method has its respective value. I usually find the appendix shadow under the screen and then radiograph it for record and demonstration purposes. Many times it is necessary to have the patient's body in the most unusual positions and at various angles. Occasionally, we require the patient to hold a loop of superimposed bowel out of the line of vision by pressure upon the abdominal walls with the hands.

The Position of the Appendix is variable. It may occupy any region in the abdomen, but essentially it is in close proximity to the cæcum. Naturally we expect to find the appendix in the subcæcal area, and usually the normal appendix is so located. I refer you to works by Sir Frederick Treves for a more detailed account of the various locations where the appendix may be found.

The normal appendix is freely mobile. Occasionally, on account of an extreme coloptosis it is difficult to elevate the cæcum, even with the patient in an exaggerated Trendelenburg position; therefore, we are unable to palpate the appendix. In such a condition I advise repeated examinations at intervals. Then again, the hypersensitive patient may tense the abdomen to such an extent as to prevent satisfactory palpation of the appendix. These conditions interfere with the value of the radiological method as an aid to diagnosis. The appendix which is fixed is abnormal; fixation signifies adhesions, and adhesions indicate previous inflammation of the appendix or neighbouring tissues.

Shape and Outline.—The normal appendix may be long or short, narrow or broad, showing

* Read at the annual meeting of the Canadian Medical Association, Toronto, June 16, 1927.

XUM

a straight canal with a segmented or an uninterrupted shadow.

The shadow outline of the abnormal appendix is usually irregular. The shape may be distorted, due to (1) kinking from adhesions—adhesions between its own various segments or to adjacent viscera; (2) irregular thickening of the appendix wall, producing narrowing of the lumen, with a corresponding dilatation either proximal or distal to the constriction; (3) there may be an enterolith which produces a filling defect in the outline.

Emptying Time.—The normal appendix fills and empties many times daily. If the lumen of the appendix be patent, there is no very good reason why the antiperistaltic action in the cæcum and ascending colon should not fill the appendix, and, likewise, as has been proved by recent writers, the appendix has a peristaltic action of its own; therefore, the normal appendix should rid itself of its contents without difficulty. If the appendix be abnormal, being bound down at certain areas, thereby hindering drainage, we can expect trouble sooner or later to ensue. If the appendix be still visible after the entire colon is completely evacuated of the opaque substance we can honestly state that the drainage is poor.

Tenderness.—To the educated hand, tenderness is a significant sign of disease. One not familiar with certain types of patients, nor with the proper degree of pressure, might easily be deceived. It is a common finding to elicit complaints of pain by undue point-pressure over any portion of the gastro-intestinal tract. To repeat: the determination of pain by one schooled in the knowledge of the proper palpatory pressure over the shadow of the appendix is valuable evidence in favour of disease. Associated with localized pain we frequently produce reflex spasm of the abdominal muscles, causing the patient to flex the thigh upon the abdomen. Another common observation is to find our patients experiencing pain in distant regions, particularly the left hypochondrium, which is no doubt a sympathetic nervous system referred pain. The characteristic gastric distress experienced by the patients during an acute attack will be complained of when pressure is exerted over the exact appendix shadow.

Should the Appendix Not be Seen, and it has not been removed, the following findings are in my opinion suggestive of appendical disease:—

1. Spasmodic incisura of the base of the cæcum (notched cæcum) following ingestion of the opaque meal. (Fig. 1).

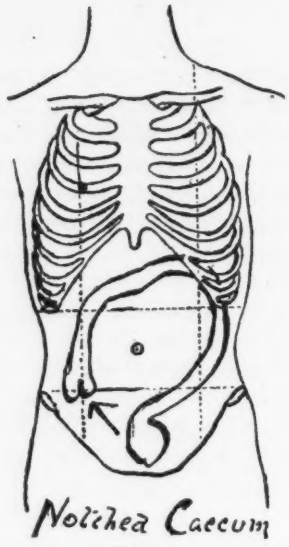

FIG. 1

2. Straight line deformity of the inferior internal border of the cæcum following the injection of the opaque enema. (Fig. 2).

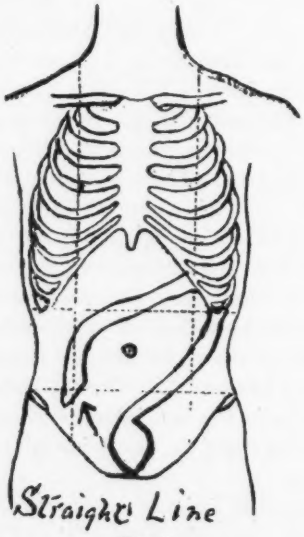

FIG. 2

3. Displacement downward, with more or less fixation, of the proximal third of the transverse colon. (Fig. 3).

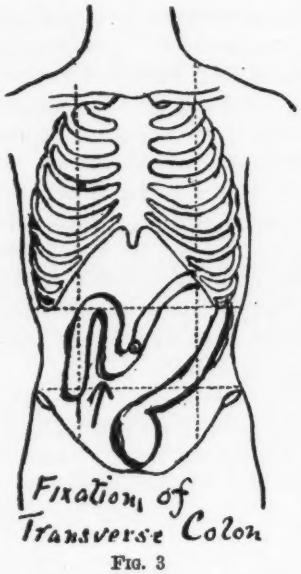

FIG. 3

4. Displacement of the pelvic colon to the right, with fixation in the right iliac area. (Fig. 4).

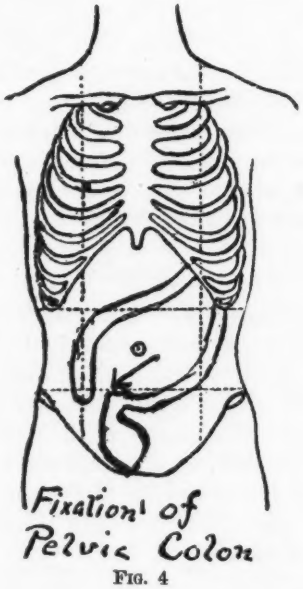

FIG. 4

Any one, or any combination, of the foregoing signs, when accompanied by the clinical picture, are important aids in arriving at a decision. These findings are indicative of the obliterative type of chronic appendicitis, the stenosis of the appendical canal being due to either a fæcal concretion lodged at the base of the appendical canal, or adhesions with kinking, or extensive tissue hyperplasia close to the entrance of the canal, the result of previous inflammation.

Direct Evidence of Appendical Disease.—Fixation of the appendix; definitely localized tenderness over the shadow of the appendix; stasis of the opaque solution in the appendix; irregularity of the lumen outline.

Indirect Evidence of Appendical Disease.—In addition to the direct signs we have certain indirect evidence of appendical disease.

1. Rigidity of the abdominal muscles on the right side.

2. Intestinal stasis, particularly in the terminal ileum, cæcum, ascending colon, and first portion of the transverse colon.

3. Reflex spasm of the stomach.

4. A six-hour gastric residue.

5. Abnormally dilated first and second portions of the duodenum, of a spasmodic nature.

6. The various signs mentioned as evidence of appendical disease in cases where the appendix is not visualized; namely, notched cæcum, straight line deformity of cæcum, looping of the proximal transverse colon downwards into the right iliac region, and displacement of the pelvic colon into the right iliac region.

DIFFERENTIAL DIAGNOSIS

Peptic Ulcer.—Gastric and duodenal ulcers are now usually diagnosed from the x-ray findings.

Gall-bladder Disease.—Disease of the gall-bladder is frequently confused with disease of the appendix. The following points are worthy of consideration:—

(a) The history of the case.

(b) Pain located high in the right abdomen.

(c) The goose neck type of deformity of the prepyloric portion of the stomach.

(d) Fixed and deformed first portion of the duodenum.

(e) Dilated second portion of the duodenum, which may be drawn towards the right.

(f) The presence of gall stones as shown by the radiograms.

(g) The presence of a gall-bladder shadow on the radiograms.

(h) The non-visualization of the gall-bladder following the administration of the gall-bladder dye.

Pelvic Disease in Women.—We commonly meet with cases of right sided pain in which

the clinician is unable to exclude the alimentary tract. If the distress complained of be below the cæcal and appendical shadows, we can say that the condition is probably one of pelvic disease. In selected cases it might be advisable to use the lipiodol and oxygen injection of the uterus and tubes as a diagnostic aid.

Cæcal Tuberculosis.—The classical appearance of ulcerative tuberculous colitis really consists in the rapid evacuation of the involved segment with a loss of the normal haustrations.

Hyperplastic tuberculous colitis is difficult to differentiate radiographically from the conditions which produce pressure defects of the colonic lumen. The history of previous ulcerative colitis, in addition to the presence of pulmonary or laryngeal tuberculosis, would assist greatly in arriving at a diagnosis.

Pleurisy.—The study of the diaphragmatic excursion and the costo- and cardio-phrenic sinuses under the fluoroscope is usually conclusive.

Jackson's Membrane.—This is a condition frequently met with, and is revealed by the fact that the ascending colon appears to be constricted and is fixed very firmly, producing dilatation, proximal and distal to the constriction.

Urinary Diseases.—The routine examination of the urinary tract should rule out urinary calculi in a large percentage of cases. The injection of the ureters and kidney pelvis with an opaque substance, such as 25 per cent sodium bromide solution, is a marked advance in the value of the x-ray for differential diagnosis.

Acute Appendicitis.—We are rarely called upon to diagnose acute appendicitis by means of the x-rays. Should such a contingency arise, I would advise the administration of a barium enema. The relation of the point of maximum tenderness to the shadow of the cæcum can thereby be easily demonstrated. I would like to sound a warning here; one must be very careful not to use any force in the introduction of the opaque solution as it might be the cause of rupturing an acutely diseased appendix.

Cancer of the Cæcum.—There are two main types of carcinoma which lend themselves to fairly accurate radiographic diagnosis; namely, adeno- and scirrhous carcinomata. In adenocarcinoma we note a filling defect which involves the wall of the bowel, producing digitations or tunnelling of the barium into the lumen of the colon; the resulting palpable mass is not particularly tender but is usually fixed. There is considerable obstruction to the introduction of the opaque solution.

Scirrhous Carcinoma.—The growth is annular, producing the napkin-ring filling defect with narrow central canal. Occasionally a mass is palpable which is not tender, and the obstruction is not marked until the very advanced stages.

Psoas Abscess.—This condition produces considerable localized tenderness and may be misleading, unless a careful history and an x-ray examination of the spine are taken into account.

Right Inguinal Hernia.—Physical examination should differentiate this without difficulty.

Arthritis of the Spine.—Radiograms will be of assistance in these cases.

NOTE:—From personal experiences I find one must not lose sight of the fact that appendicitis may be associated with one or more of the foregoing pathological conditions.

Conclusions

In conclusion I wish to summarize as follows:

The clinician should furnish the radiologist with a summary of the physical examination.

The radiologist should have a free hand to make such examinations as he deems advisable to assist in arriving at a diagnosis.

The x-ray examination of the appendix is of definite value when viewed in the light of the foregoing remarks.

O. Wiese, (*Munch. Med. Woch.*, 1927, p. 1937), reports a case of recovery from tuberculous meningitis. The patient was a girl, aged 10 years, suffering from tuberculosis of the left hip-joint and the right ankle. She developed typical symptoms of meningitis and the specific bacilli were found in the cerebrospinal fluid and the urine. On the fifth day 3 c.c. of the cerebrospinal fluid were injected into the buttock and 1 c.c. of old tuberculin (1-1000) into the vertebral canal. Next day she was much improved. Five months later the right kidney was removed and found to contain a cavity and caseous focus. After that the joint lesions quickly healed.

THE CHOLESTEROL CONTENT OF THE BLOOD OF INFANTS AND CHILDREN

By Alton Goldbloom, M.D., and Rudolf Gottlieb, M.D.

Montreal

THE wide distribution of cholesterol throughout the animal and vegetable kingdoms suggests that it plays a rôle of fundamental significance in the processes of cell life. According to Bayliss,[1] "it is a monatomic alcohol of a substance related to the terpines; for convenience, it is usually considered as a lipoid, which in the strict sense it is not. It is soluble in ether, benzene, chloroform and fats, and insoluble in water and cold alcohol."

The sources of cholesterol in the human body are first from ingested foodstuffs, and secondly probably from synthesis also—as Fox and Gardner[2] have recently tried to demonstrate. The cholesterol content of the blood in the human organism is normally quite constant, and, as we shall show, varies unduly only with age in the first decade of life, and as the result of different pathological conditions. In the regulation of cholesterol in the body, the adrenals and liver play an important rôle, but probably have nothing to do with its synthesis. The adrenals are regarded by Landau and McNee[3] as intermediate organs for accumulation, and the liver for filtration. Albrecht and Weltmann[4] have examined 350 adrenal glands, and have divided them into three main groups according to their cholesterol content. In the first group they found a very rich cholesterol content in cases of arteriosclerosis, cardiac disease, chronic nephritis, pulmonary emphysema, and cirrhosis of the liver. In the second group a low cholesterol content was found in some cases of acute or subacute pyæmic processes, in pneumonia, and erysipelas. In the third group the content was intermediate between that of the first two groups, on account of a combination of diseases, such as arteriosclerosis with erysipelas, or nephritis with pneumonia. These results substantially parallel the findings in the blood cholesterol in these same conditions.

Relatively little work has been done on blood cholesterol in children. We have, therefore, approached our investigations with the purpose of determining the content of cholesterol in the blood of a large series of normal and sick infants and children. Our first determinations were made on whole blood, using Bloor's[5] method. On 138 individuals 160 estimations were made. A variety of conditions were examined, in addition to a group of normal children. Normal values were found to vary according to age. The highest values were found in cord blood, and the lowest values in older children, and moderately high values in infants under two years of age (Chart I). The values for cord blood varied between 216 and 290 mg. per 100 c.c. of blood. These findings differ from those of Chauffard, Laroche, and Grigaut,[6] whose figures are much lower, from 35 to 85 mg. per 100 c.c. of blood. Their work was done on serum, while our estimations were made on whole blood, the difference being attributed to the high red and white blood cell content of the blood of new born infants.

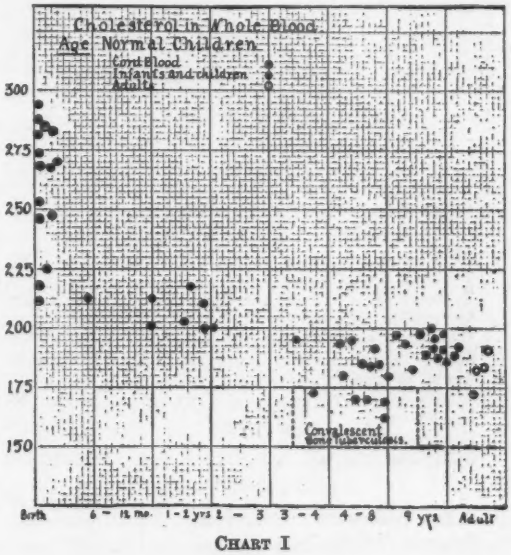

CHART I

Moreover, Müller[7] has shown that leucocytes are particularly rich in cholesterol. High values, between 200 and 225 mg. per 100 c.c. of blood, were found in normal infants under 3 years of age, and a content between 175 and 200 in all older children as in adults. This relationship to age seems to be maintained in those pathological conditions in which the cholesterol is increased in the blood.

An increase in the cholesterol of whole blood was found, especially in typhoid fever, which gave us our highest values, the highest being 304 mg. in a child 2 years of age, and also in tuberculous meningitis, encephalitis lethargica, in acute rheumatic fever, chorea, and scarlet fever (Chart II). This usually great increase in typhoid fever may at times be of value in differential diagnosis (Chart III). In one instance determinations were made at intervals during and after recovery. The fall to normal was very gradual, so that two months after discharge from the hospital the cholesterol was still somewhat elevated (Chart IV).

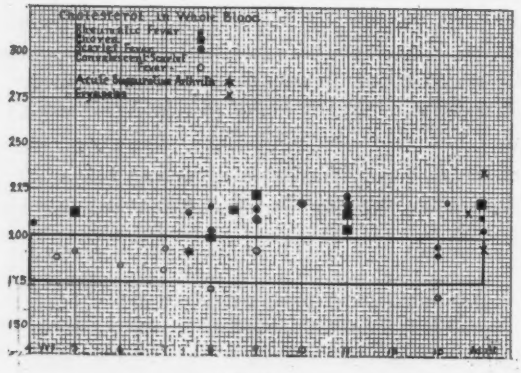

CHART II

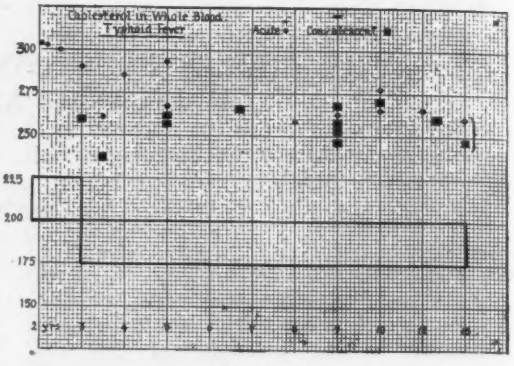

CHART III

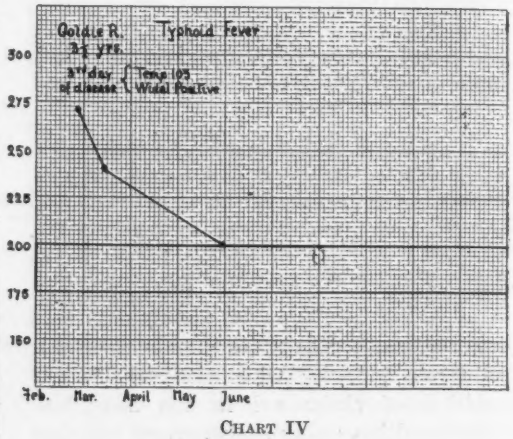

CHART IV

Moderately low values are found in chronic bone tuberculosis, and very low values in amyloid disease and in cœliac disease (Table I). The cases of bone tuberculosis showed values between 167 mg. and 182 mg. In one case of amyloid disease it was 140 mg., and in one case of cœliac disease 138 and 140 (Table II).

TABLE 1

CHOLESTEROL INCREASED

Condition	*No. Estimations*	*Mg. Chol. per 100 c.c.*	*Normal Range for Age*	*Remarks*
Cord blood	19	216 to 290, average 257	175–200	
Typhoid fever (acute)	14	260 to 304, average 277	175–200	
Typhoid fever (convalescent)	11	249 to 272, average 258	175–200	
Meningitis, tuberculous	2	250 to 282	175–200	
Encephalitis lethargica	2	263 to 271	175–200	
Scarlet fever (acute)	6	202 to 219, average 210	175–200	
Acute rheumatic fever	7	193 to 223, average 213	175–200	
Chorea	7	201 to 220, average 211	175–200	
Eczema	1	219	175–200	8 years old
Eczema	1	241	200–225	16 months old
Cretinism	2	224 to 230	175–200	No thyroid, or insufficient amt.
CHOLESTEROL DECREASED				
Cœliac disease	2	143 to 138	200–225	
Amyloid disease	1	140	175–200	

TABLE II

CHOLESTEROL NOT INCREASED

Condition	No. Estimations	Mg. Chol. per 100 c.c.	Normal Range for Age	Remarks
Meningitis (meningococcus)	1	198	175–200	
Scarlet fever (conv.)	8	173 to 190, average 184	175–200	Average acute case 210 mg.
Eczema	2	196 to 211	200–225	Receiving thyroid extract
Cretinism	5	190, 198, 191, 192, 201	175–200	2 grs. thyroid 4 x per day
Acute suppurative arthritis	4	174, 191, 186, 182	175–200	
Acute bronchitis	2	203 to 219	200–225	Infants
Acute bronchitis	1	186	175–200	Child
Acute broncho pneumonia	1	178	175–200	Child
Acute broncho pneumonia	2	199, 201	200–225	Infants
Pleurisy with effusion	2	187, 185	175–200	
Empyema	1	189	175–200	
Tonsillitis	1	179	175–200	
Otitis media	1	200	200–225	Infant
Mastoiditis	1	186	175–200	Child
Rickets	3	202, 198, 219	200–225	
Rickets (late)	1	178	175–200	4 years old
Tetany	1	219	200–225	
Athrepsia	4	203, 217, 212, 219	200–225	
Constipation	1	170	175–200	
Burns	1	191	175–200	
Diphtheria (conv.)	3	164, 189, 185	175–200	
Cervical adenitis (acute)	1	189	175–200	
Chronic tuberculosis (5 bone, 2 pulmonary)	7	167–182	175–200	

We have under observation one child aged 7 years, with cretinism. She had never received treatment up to the time of her admission to the hospital. When these studies were begun, she had been receiving thyroid extract for two months; two grains per day for the first month, and one grain per day during the second month (the dose had been so reduced on account of excessive loss of weight.) The cholesterol content of her blood while she was receiving thyroid was between 190 and 198 mg. At the end of one month without thyroid it was 224. There was an increase of four pounds in weight during this month. Thyroid was again begun in doses of one grain per day, and at the end of another month the cholesterol was still high—230 mg. After ten days on 2 grains per day, the cholesterol fell to 201, or practically within normal limits. Here we see that the cholesterol content of the blood is in inverse ratio to the metabolic rate, as in myxœdema and in nephrosis (Chart V).

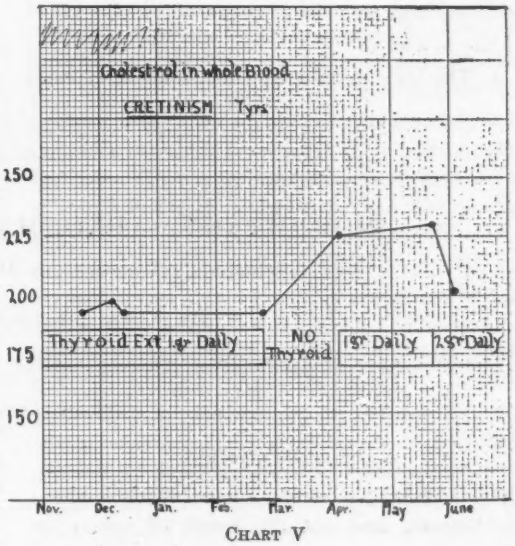

CHART V

In Fischel's[8] group of skin diseases, in which he found an increased cholesterol of the blood, there are a number of cases of eczema in children. In our series there are four cases of eczema. One was a child of 16 months with an eosinophilia of 6 per cent who showed 241 mg., an increase of 20 per cent. Another infant showed 219 mg., an increase of about 10 per cent, and one aged 10 months showed no increase, 206 mg. and 207 mg. on different days. It is interesting to note that this child was receiving thyroid extract for the treatment of his eczema, and this may account for the low value found. An older child aged 8 years showed 211 mg., which for his age represents an increase of about 20 per cent.

No significant variations from the normal were found in septic arthritis, bronchitis,

broncho-pneumonia, pleurisy, empyema, tonsillitis, otitis media, adenitis, rickets, tetany, athrepsia, and constipation.

The data here given represent an attempt to satisfy our curiosity with regard to the relationship between cholesterol and various diseases. The high blood cholesterol in infants, and the subsequent diminution to the fixed level which persists throughout the rest of life, is an interesting manifestation of growth. The fact that cholesterolæmia occurs in certain infections and metabolic diseases, and not in others, gives direction for subsequent studies.

Conclusions

1. Cholesterol in the whole blood is higher the younger the individual.

2. This relation is maintained even in diseases where cholesterol is increased, as in typhoid fever and eczema.

3. The highest normal values were found in cord blood, and this is probably associated with the high number of corpuscles in the blood of the newborn.

4. The highest increase was found in typhoid fever, and a moderate increase in streptococcus infections.

5. The cholesterol is increased in cretinism when thyroid is not given.

6. It is not increased in all infections, *e.g.*, acute suppurative arthritis, and broncho-pneumonia.

7. The lowest values were found in chronic bone tuberculosis, cœliac and amyloid disease.

Samples of cord blood were obtained through the courtesy of the Department of Obstetrics of the Royal Victoria Hospital Maternity Pavilion, and samples of blood in cases of infectious diseases were obtained through the courtesy of the Alexandra Hospital. To both of these institutions we desire to express our hearty thanks.

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HEREDITARY ABNORMALITIES OF THE EYE*

VI. (SECTION 2) INHERITABLE DEFECTS INVOLVING THE RETINA

BY MADGE THURLOW MACKLIN, M.D.

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RETINAL DETACHMENT

DETACHMENT of the retina which is spontaneous, and not the result of injury or evident disease of the eye, is definitely inherited in some families. Clausen[5] who has collected some of the cases from the literature, mentions the pedigrees obtained by Alt, in which the mode of transmission was the dominant one; by Treacher Collins, in which the disease appeared to be due to a recessive factor; and by Pagenstecher, in which it behaved as a sex-linked recessive character, being transmitted by healthy females to affected males. It is impossible to say from the number of pedigrees reported and the analysis of the underlying pathology, whether we have here three different modes of transmission of one defect, or whether detachment of the retina is not merely a defect associated with several diseases of the eye.

* Part I, Laws of heredity and their exemplification in the inheritance of eye colour, *Canad. M. Ass. J.*, Nov., 1926, xvi, 1340. Part II, Inheritable defects involving the eyelids and their mode of transmission, *Ibid.*, Jan., 1927, xvii, 55. Part III, Anomalies of the entire eyeball, *Ibid.*, Mar., 1927, xvii, 327; April, 1927, xvii, 421. Part IV, Inheritable diseases affecting the conjunctiva, *Ibid.*, June, 1927, xvii, 697. Part V, Inheritable defects of the iris and lens, *Ibid.*, Aug., 1927, xvii, 937. Part VI, (Section 1), *Ibid.*, Oct., 1927, xvii, 1191.

Lidbetter and Nettleship[16] report a family in which there were many members who were paupers, insane, and blind. The blindness was due in most of the cases examined, to retinal detachment. (Fig. 27). As will be noted here,

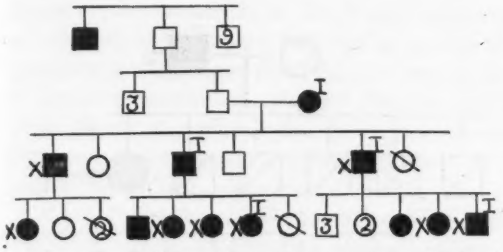

FIG. 27.—Pedigree showing the occurrence of retinal detachment in several members of related families. Squares indicate males; circles, females; clear symbols with a numeral indicate corresponding number of unaffected offspring. I means insane; x, retinal detachment; ⧵ died in infancy; black symbols, blindness. The cause of blindness in the male in the first generation and the female in the second is unknown. After Lidbetter and Nettleship.[16]

blindness was brought into the family directly by the mother in the second generation who is marked "I" and who lost her sight at about 30 years of age. The cause of the blindness is unknown. A paternal uncle had also been blind in one eye since youth: again the cause was obscure. Of the five living children resulting from the marriage, three were blind, two of them due to definite retinal detachment. The cause of blindness in the case of the third son, who was likewise insane, appeared to be a congenital ocular malformation. Of the offspring of these three sons, there were eight who were blind, and six of these showed detachment of the retina. Examination of the other two revealed other defects in the eyes, some of which interfered with a clear vision of the fundus, so that they may also have been cases of retinal detachment. In view of the uncertainty of the mode of transmission of this defect, all that can be said is, that persons suffering from it should not reproduce, and parents of children in whom the defect has appeared, should refrain from engendering any more children.

COLOUR BLINDNESS

This very interesting anomaly of vision is found for the most part in the male. Howell in his Physiology states that only from 0.01 to 1 per cent of females are said to exhibit it, while it is found in from two to four per cent of males. Formerly of little significance from the standpoint of the public safety except as it occurs in those responsible for the interpretation of the red and green signals in train service and navigation, it has become of widespread importance in the last few years due to the universal use of these colours in automobile traffic signals, particularly in congested sections of our cities. Although I am not aware that the colour vision of those who apply for drivers' licenses of commercial vehicles has become a matter of compulsory testing, it seems to me that it would be advisable to apply it to all who drive automobiles of any description. While it might be unnecessary as yet to refuse a license to colour-blind persons, they should be warned of their defect, and learn not to cross intersections at which coloured signals are operated until they see the general traffic move in the desired direction, unless the intention of the signal is indicated by some means in addition to the colour of the light.

I had a very striking illustration of how even intelligent persons may be colour blind, but unaware of their defect until it is pointed out to them. Sections of intestine had been distributed to the class for study. The blood vessels had been filled with a gelatine mass containing a brilliant bluish green dye, and the section had been deeply stained with eosin. The contrast between the blue-green and the red was very striking, but I found a student who was unable to locate any blood vessels in his section, although there was a very large one in the field at the time. After making a drawing of it, I was able to make him distinguish the form of the vessel, but he could detect it only with difficulty, since it and the background were almost the same shade of gray to him. He had never known before that he was colour blind.

All forms of colour blindness are apparently congenital, and inherited as a sex-linked recessive character, that is, they are exhibited for the most part by the male, and transmitted to him by his unaffected mother, (see Table 2, Mating IX.[17]) This is as true of the cases in which there is merely an inability to distinguish between red and green as it is of cases in which total lack of colour appreciation is present. Because of the relative prevalence of the defect, many pedigrees of the condition

have been reported, only a very few of which will be mentioned here.

Fig. 28 shows the transmission of the red-green type of colour blindness through eight generations. I judge that with the exception of the last two generations all members of the family who did not show the defect, or who did not transmit it, were omitted from the record, thus conferring upon it a diagrammatic simplicity that is lacking from the pedigrees in which all members are listed. This particular family has been chosen, however, because it illustrates so well the descent of the defect through a colour-blind grandfather, and a normal mother, to a colour-blind grandson, there being thus an alternation of affected with unaffected generations. The other point which it illustrates is, that if one finds a colour-blind son of a colour-blind father, the obvious conclusion that he has inherited his father's defect is not justified. He has inherited his defect through a "carrier" mother, although the fact that she belongs to a colour-blind family may not always be so evident as it is in this pedigree. She, like every other female shown in this chart with the exception of the one in the first generation and the last one in the last generation, was a carrier of the defect, (see Mating IX,[17]) and passed it on to her son.

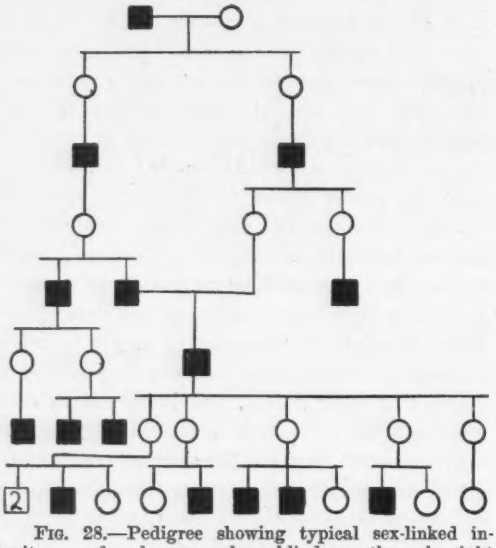

FIG. 28.—Pedigree showing typical sex-linked inheritance of red-green colour blindness through eight generations. Black squares indicate colour-blind males. The mothers of all the affected males were carriers of the defect, which explains the appearance of colour blindness in the son of the colour-blind father who had married his second cousin once removed, thus making the son the third cousin of his own father and second cousin twice removed to his mother. He inherited his defect through his mother who did not show it and not from the father who did. After Mott[20] from Horner.

The other pedigree of colour blindness shown in Fig. 29 was chosen because it has in it a female who exhibits a defect found usually only in the male. The two parents in the first generation were first cousins, and the mother was a carrier (See Mating X,[17]). Since the five sons died in infancy there was no chance of their showing their inheritance from their mother, but the daughter received the defective chromosomes from both parents and thus showed the condition as an evident defect. As will be recalled from Table 2,[17] all sons receive their one sex chromosome from their mother, and if it carry a defect, then the sons will exhibit it. Since both sex chromosomes of this mother carried the defect, as evidenced by her exhibiting it, it follows that *all* her sons will be colour blind. (Matings XI and XII[17]). This pedigree is in accord with the theory in this respect, for all four sons of this colour blind woman inherited their mother's condition. The two daughters also would have to be carriers but this is not shown for they had not married and so had not had opportunity to show through their sons that they were transmitting the defect.

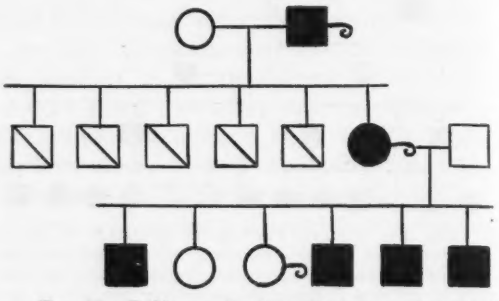

FIG. 29.—Pedigree of colour blindness and crooked little fingers. The parents in the first generation were first cousins, thus explaining the appearance of the defect in the female in the second generation. Note that all sons of the affected mother show the defect. \ means died in infancy; the curved line to the right of the symbol means crooked fingers, and the black symbols, colour blindness. After Nettleship.[24]

This family is of interest from another standpoint, for it shows the transmission as well of a dominant character, namely crooked little fingers, which was passed on from grandfather to daughter, to granddaughter. This pedigree

is similar to that shown in Fig. 11[19] in which two characters, one of the dominant type, the other of the sex-linked variety were exhibited in the same family.

Colour blindness is not sufficiently detrimental to the individual to warrant us making any eugenic rule concerning it, for it interferes not at all with the ordinary life of the person affected, nor with those about him, so long as he is not in a position to endanger lives by misinterpretation of colours. Due to its prevalence, however, those engaged in traffic of any sort should have their colour vision tested.

Many pedigrees of this condition have been reported, only a few of which will be mentioned here for reference. Nettleship has reported many families, one[24] in which it was shown by two sisters; and, as we would expect, the one son of the first, and the four sons of the second *all* were colour blind. (Mating XI, XII[17]). Other families recorded by him showed the defect through three[21] and four[22] generations, while those reported by Wölfflin[34] exhibited it through two and three generations. Usher[31] recorded it through five, and Horner (cited by Mitt[20]) through eight generations (Fig. 28).

Optic Atrophy

This defect of the eye holds first place as a cause for blindness in the pupils who were admitted to one of our large schools for the blind during the years 1921-1925, being responsible for a little over a fifth of the admissions. It must be recognized that there are many explanations of optic atrophy, other than inheritance, and that we can not attribute all of these cases to that underlying cause. Derby[1] analyzed 117 cases, and found that 71 of these had an unexplained etiology. Of the causes which he mentions, several accounting for 25 of the cases would operate too late in life in the production of the atrophy to account for pupils in a school for the blind. This would leave 71 out of 92 cases, or 77 per cent, with no etiology. It is probable that they had in large part a hereditary background, although the patients may have been unaware of it. Because of the fact that this disease, like so many of those affecting the eyes, is for the most part inherited as a sex-linked defect, and since we find that two-thirds of the pupils with optic atrophy in this school were boys, and because sex-linked defects so often occur in the males of a family in which there appears no history of the defect, it is not unreasonable to suppose that a large percentage of these pupils had optic atrophy due to their inheritance.

Although the average age of onset of loss of vision from this disease is about 20, it has affected victims at an age as early as six. In the majority of families, the disease is inherited as a sex-linked recessive defect, although there are other pedigrees in which it appears to act as if due to a simple dominant factor; occasionally one meets with a pedigree which seems inexplainable on either basis, but which leaves no doubt that there is a marked tendency in that family to develop optic atrophy. The literature up to 1909 was summarized by Nettleship,[23] and only a few of the many pedigrees which I have encountered in the literature can be mentioned here.

One of the striking things is, that even in families in which there were several blind members, and in which the blindness had come on at an early age, the blind individuals still continued to marry and transmit the defect. Thus in a family reported by Haswell,[12] a man, blind at nine, had seven children, although all his brothers and sisters had the same defect as himself. Another, blind at 27, married and had six children, although five of his brothers were blind. One of these who lost his sight at 15, had three children: another, who developed optic atrophy at twenty, had five; and a third, who developed it at twenty-nine, had four. Such a family history illustrates only too well how, despite the knowledge that such a tragic fate hung over the family, these people, even though they had already exhibited the disease, married and propagated the defect among their descendants. Nettleship has reported cases in which the condition, passed on for the most part as a sex-linked recessive factor exhibited mostly by the male, was handed down through two,[23] four,[25] and six[23] generations; Norris[26] has found it through four and six generations; Hirsch[13] through six, Kiersmaecker[14] through two, Batten,[2], Bruner,[3] and Taylor[30] through three, and Hancock[11] through five. About two-thirds of the pedigrees show the typical sex-linked recessive mode of inheritance, while most of the remainder exhibit the dominant. The families reported by Doyne[7] of optic atrophy in a mother

and her three sons, and by Lawson[15] of a mother and her one son might be interpreted in either way. Those listed by Gunn[10] of a mother and daughter, and by Ginzburg[9] of a man, his son and daughter, her two daughters and son and the latter's three sons, are best explained on the basis of dominant transmission.

Pancoast[27] and Fisher[8] both suggest that the primary cause lies not in the retina itself, since the degeneration and the resulting central scotoma are so symmetrical, but in the enlargement of the pituitary which encroaches upon the chiasm. Pancoast says that x-ray pictures of the sella turcica show an enlarged sella.

Two pedigrees of optic atrophy have been selected because although they both exhibit typical sex-linked recessive inheritance, they illustrate two different so-called laws of heredity, that of Nasse and that of Lossen. In both types of transmission, the immediate ancestor who belongs to the affected family is the "carrier" mother who is usually free from evident symptoms of the disease. In Nasse's mode of inheritance she is descended from a male who was affected, either as his daughter, granddaughter or so on. In Lossen's type of transmission, a male who is affected never has affected descendants; they are forever free, the defect being carried only through the female line.

In Fig. 30 the so-called transmission according to Nasse takes place. An affected male has three affected grandsons by one daughter and one affected grandson by another. Going on to the next generation we find six great-grandsons who can trace their defect back to him, although in these cases there are two intervening unaffected females between the affected males. There is also one great-great-grandson whose mother, grandmother and great-grandmother intervened between him and the male ancestor to whom he owed his condition. Yet in each of these cases the immediate ancestor who belonged to the affected family was an unaffected mother.

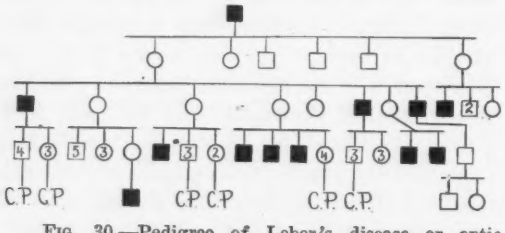

FIG. 30.—Pedigree of Leber's disease or optic atrophy showing typical sex-linked recessive inheritance with the defect coming down from male to male with intervening unaffected females. C.P. means clear progeny. After Nettleship.[23]

The transmission according to the law of Lossen is illustrated in Fig. 31 taken from Worton.[35] Although there are here eleven males suffering from optic atrophy not one of them has inherited his defect (so far as the pedigree shows) from even a remote male ancestor, and from none of them is there sprung a defective descendant. Such a type of inheritance has been looked upon as characteristic of some diseases, so much so, that if the pedigree does not conform to this type of inheritance the diagnosis has been questioned. By a careful analysis of practically all such pedigrees one sees how a mere coincidence has been fabricated into an infallible law, so that it has been stated in the case of hemophilia for example, "that no descendants of an affected male ever show the condition."

Let us examine carefully the chart in Fig. 31.

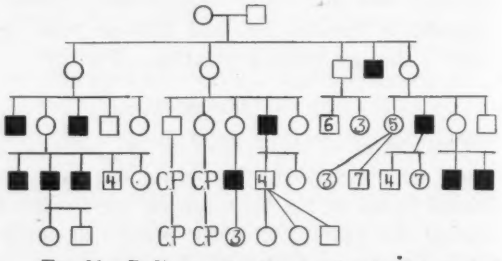

FIG. 31.—Pedigree of optic atrophy showing typical sex-linked recessive inheritance. Illustrates the transmission according to the law of Lossen while Fig. 30 illustrates the transmission by the law of Nasse. For explanation, see text. After Worton.[35]

There are eleven males affected and the pedigree covers five generations. Surely, one would think, there was adequate opportunity for the males to transmit if it were possible. Of the eleven, seven never married and so had no opportunity of demonstrating their inability or their capacity to transmit the disease. Of the four who married, one had three daughters, one had one son and one daughter, and one had four sons and one daughter. Now we recall from Table 2[17], Mating VIII, that no male affected with a sex-linked recessive defect, provided he be mated to a normal woman, ever has affected sons, and his daughters carry the defect recessive and so do not give evidence that they have inherited it.

until they mate and produce sons in sufficient numbers to give opportunity for one of them to inherit her latent defect. Hence these three affected males had no opportunity of showing whether they had transmitted the condition. The one male whose descendants had reached the third generation, had four sons none of whom could inherit his blindness (Mating VIII[17]) and whose descendants must consequently be free, and one daughter who never married, and so who never showed through her sons, the defective chromosome which she had received from her father. Thus not once in the entire pedigree have the conditions been such that transmission by the male could possibly be demonstrated. Most other pedigrees which have been used to support the law of Lossen are comparable to this when examined.

The conclusion is that if a male who is afflicted with a sex-linked recessive disease has daughters, who in turn have a fair number of sons, we will find that there is no support for the statement that no males affected with sex-linked recessive conditions ever transmit their defect.

Retinitis Pigmentosa

This affection, resulting usually in complete blindness, in contrast to optic atrophy, in which some peripheral vision is retained as a rule, is apparently by no means infrequent, inasmuch as 5.5 per cent of the pupils admitted to the afore-mentioned school* for the blind were diagnosed as suffering from retinitis pigmentosa.

According to Usher's figures half of the cases are affected before the age of 12, so that in this disease, in contrast to glaucoma, and cataract or optic atrophy in some cases, the individual is usually afflicted with this condition before he or she reaches the marriageable age. Under such circumstances, it should be easier to eradicate the condition than in those affections which do not come on until middle life.

Retinitis pigmentosa like optic atrophy appears to be inherited in several distinct ways. Again we have to speculate upon whether there are fundamentally different underlying causes which result in similar end symptoms and so become classified as a single disease, or whether the same disease is transmitted as a dominant character in one family, and as a sex-linked recessive character in another, and in a few instances apparently as a pure recessive character. More accurate separation of cases into classes according to symptoms and perhaps systematic examination of the eyes microscopically might help, but there is little hope of the latter being attained, inasmuch as the eyes are practically never removed at operation in this condition.

In Fig. 32 is given a very extensive pedigree

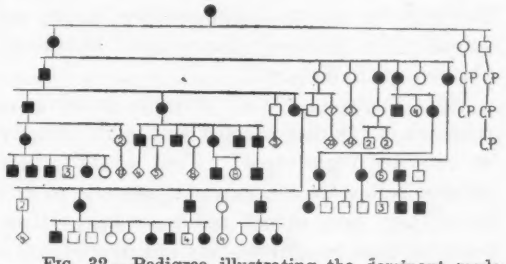

Fig. 32.—Pedigree illustrating the dominant mode of transmission in retinitis pigmentosa. Males and females equally affected, and each transmits the defect to both sexes. Explanation of symbols same as in above figures. After Nettleship.[23]

of retinitis pigmentosa where the transmission is of the simple dominant type. There are nineteen males and nineteen females affected in this family, thus eliminating any sex-linked factor. No unaffected persons transmitted the condition, thereby removing the possibility of its being a recessive character, and the one consanguineous marriage in the fourth generation between an affected male and his unaffected first cousin descended from affected stock did not increase the percentage of affected in their offspring. This was 50 per cent which is the expected ratio when a hybrid for a dominant character mates with a pure recessive. (See Mating V, Table 1[18]).

A mere glance at such a family chart leaves in my mind no doubt that there is need for popular education directed to the end that such individuals be restrained from propagating their defect. From one affected person in the first generation, there came one affected in the second, four in the third, six in the fourth, thirteen in the fifth, and twelve in the sixth. Some of those in the last generation were probably too young to have shown it at the time that the pedigree was compiled, so that the number here

* The statistics found in this and the former papers as to the varying percentages of pupils afflicted with hereditary diseases have been taken from the records of the School for the Blind at Brantford, Ontario. These statistics cover the admissions during the years 1921-1925 inclusive.

XUM

would have been increased had the whole family been re-examined twenty years later.

Other extensive family records of this condition covering five generations, and acting as a dominant character, have been collected by Snell,[28] and embracing four generations, and behaving for the most part as a dominant, by Snell.[29] Pedigrees through four generations are given by Nettleship,[23] and through three and five by Wilmer,[33] in all of these the disease acting as if due to a sex-linked recessive factor; while families in which several individuals were affected, and in which the transmission was indicative of a non-sex-linked recessive factor, are furnished by Wilmer,[33] Carruthers,[4] Davidson,[6] Clausen,[5] and Webster.[32]

What ought to be our attitude in advising members of families affected with optic atrophy or retinitis pigmentosa? First of all, those afflicted before the marriageable age and so who know their fate, should not reproduce. Inasmuch as these conditions may not develop until the late twenties or even in the late forties in one person and yet develop in the children of such individuals in early adolescence, it would be far better if *all* the members of families in which these afflictions run would refrain from reproducing. (The tendency for the disease to appear earlier in the offspring than it has in the parents is illustrated in the pedigree of Haswell,[12] in which the mother who did not become blind from optic atrophy until 48 had six children, who developed her condition at the ages of 27, 33, 20, 29, 15 and 20). It would mean the sacrifice of one generation only, and the disease would be eliminated. Such persons could adopt children, and so find partial satisfaction for the desire to raise a family. As long as those who carry such devastation in their train continue to reproduce, so long will innocent children who have no voice in the matter of their coming, be forced to carry a burden which they have not chosen to bear and which should never have been thrust upon them.

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Treatment of Placenta Prævia.—The two main conclusions drawn by A. P. Ramos and Julio Basan with regard to the treatment of placenta prævia are that labour should not be hastened artificially, and that improvement both in maternal and fœtal mortality will follow more general recourse to Cæsarean section. They advise that patients with placenta prævia should be sent at once to hospital, and remark that since nine out of ten cases of hæmorrhage during the last months of pregnancy are due to low placental insertion, it is advisable to abstain from vaginal examination before admission of the patient to a clinic. Reference is made to Hitschmann's figures based on 6,000 cases; patients treated in their homes showed a mortality of 20 per cent (15 per cent from hæmorrhage, 4.5 per cent from puerperal infection), and those treated in hospital had a mortality of 6 per cent (4 per cent from hæmorrhage and 1.9 per cent from puerperal infection. Other treatments than Cæsarean section are indicated in some cases of marginal or lateral insertion in early stages of pregnancy. —*Brit. M. J.*, Oct. 15, 1927.

ELECTRICAL BURNS AND ELECTRICAL SHOCK*

By R. E. Gaby, B.A., M.D., F.A.C.S.

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THE incidence of electrical accidents is apparently on the increase, because of the greater use of electricity in the industries and the household. While instruction as to the attendant hazards, the use of safety devices, and instruction and exercise in resuscitation methods have kept down the injuries and death among electrical workers, there apparently seems to be a lack of information on such subjects among the public. Electrical accidents are partly an engineering problem, and partly a medical problem. From the medical standpoint, the electrical accident may be subdivided into several phases, *viz.*:

1. Electrical shock.
2. Electrical burns.
3. Associated traumatic conditions (such as wounds, fractures and other types of injury.)
4. Complications of electrical injury (such as paralyses, organic and functional.)
5. Sequelæ of electrical injuries (scars and deformities—psychoses and neuroses, neurasthenia, melancholia.)
6. Death.

The electrical accident is caused by the individual coming in direct or indirect contact with a conductor of electricity. Indirect contact is made by means of an intervening object such as the string of a kite, dusters, air, etc. The immediate result of this contact is an electrical shock of a greater or lesser degree, with or without external injuries.

The electrical shock may be accompanied by unconsciousness of varying duration, by symptoms which we usually associate with surgical shock, or death may result. The effects of the passage of electrical current are: rigidity of the muscles, more or less generalized; interference with respiration, or even paralysis of the respiratory centre; excitation of the central nervous system; spasm of blood vessels, with congestion and œdema. The exact mechanism of death from electrical shock is still uncertain. Much experimental work has been carried on, and it is hoped that in the near future we may have something definite as to causation. At present, it is thought that death may be due to, either a paralysis of the respiratory and vasomotor centres, or to ventricular fibrillation. There are various theories as to the relation of high and low voltages, paths of current, etc., as affecting the manner of death. However, the different effects, fatal or non-fatal, depend upon various factors, such as:

1. The type of current, whether alternating or direct; alternating currents doing greater damage.

2. The voltage, whether high or low tension. It has been said that death from low voltage current is due to ventricular fibrillation, and from high voltage, to respiratory centre paralysis.

3. Duration of contact.

4. Point of contact and path of current. It is said that if the course of the current is from head to foot the current fails to affect the heart, while if through the chest the heart is involved. However, our clinical experience does not absolutely agree with these statements. The degree of injury is probably more or less proportionate to a combination of amperage and voltage and the duration of the contact.

5. Condition of contact. Where the resistance of the skin is lowered, and where a good ground is made, the local injuries are probably very slight, while the systemic injuries are usually grave.

6. Concentration of current. The size of the electrode, or surface of contact, determines this concentration, the concentration being in inverse proportion to the contact.

7. Character of grounding.

8. Personal toleration. *E.g.*, status thymolymphaticus. It is also claimed that expectation or attention have an effect on the injuries received, though this is very doubtful.

In about 90 per cent of the accidents, the main injuries are from burns, and not from shock. The burns may be of several types:

*Read before the Academy of Medicine, Toronto, March 1, 1927.

1. The true electrical burn caused by contact with the conductor.

2. Burns caused by the intense heat generated by short circuiting, the so-called "flash" or "arc" burn.

3. Clothing burns, caused by the ignition of the clothing by the arcing.

This last is of the type of the ordinary burn. The second type is usually more severe on account of the extreme heat generated, and blistering is not so common as in the ordinary burn.

In the true electrical burn the degree of contact and the resistance of the skin determine the amount of local injury. The latter varies from 3,000 to 5,000 ohms, but may be as low as 1,000 ohms. The resistance of the skin depends upon its thickness and its state of cleanliness and dryness. It is less when the skin is wet, as by perspiration or external moisture, or when it is dirty. The chief resistance is in the skin, and the remaining body resistance can be neglected in the passage of the current through the body. The various animal tissues offer resistance in the following order, bone, fat, tendon, skin, muscles, blood. and nerve. The blood vessels are good conductors and this may possibly explain the frequency of thrombosis more or less remote from the site of contact. If the resistance of the skin be low, and the contact good, the current passes readily into the body causing severe systemic disturbance with little or no change at the point of contact. The greater resistance of the skin and the duration of contact, the more severe the burns. The burns take place at the points of resistance and so are found at the points of entrance and exit of the current. The electric burn varies from the smallest spot to the complete destruction of a limb, or part of it, or of large masses of tissue including bone. The small electrical burn is a burn of fourth degree, more or less circular in shape, pale yellow in colour, bloodless, cold and painless The edges of the burn are slightly higher than the surrounding skin; the centre is depressed or excavated, possibly distinctly charred as if punctured by a red hot wire, producing a deep sinus. There is no reddening or blistering of the skin in the vicinity; the base of the burn is ragged and irregular and is strongly united to the subjacent tissues and remains unchanged for days or weeks. It gradually starts to loosen and may come away *in toto* or in pieces by a process of aseptic necrosis. Pus formation is exceptional. There may be one or more such electrical spots at the points of entrance or exit. In the severe types of burns we have areas of charring and carbonization, down to and including the bone. In the case of the hand, the hands are fixed in a position of complete flexion with complete charring of skin and flexor tendons, or even bone. Within twenty-four to thirty-six hours the surrounding skin is slightly reddened and the deeper tissues more or less œdematous. In the case of an extremity, it becomes markedly swollen for a considerable distance beyond the site of burn or the whole limb or greater portion of it may become gangrenous as a result of remote thrombosis. This may occur both in the extremity, at the site of entrance, or in the extremity through which the current emerged. Occasionally, skin apparently not damaged to any extent, after several days, will rapidly show necrotic changes and finally slough. A similar phenomenon occasionally takes place after the burns are entirely healed. Ulceration may take place, and considerable time is required for this to re-heal. The underlying muscles are often paralyzed, and frequently are involved in the sloughing because of the coagulation of myosin by the heat. Sensory changes from a paræsthesia to a complete anæsthesia may occur.

The severity of an electrical burn is at first generally under-estimated; the duration of the time required for healing is also underestimated. It usually takes about two to three times the healing time of the ordinary burn. There are definite vascular changes, consisting of a disintegration of the media, the lumen remaining intact and the blood in the neighbourhood remaining fluid. This weakening of the vessel wall results in often serious hæmorrhages, and may occur at some distance from the site of the apparent burn. Operative interference in an apparently healthy site may result in severe secondary hæmorrhage without any infection being present. There is also a tendency to peripheral thrombosis, angiospasm, and œdema. One must be guarded then in prognosis, both as to the extent of burns and

to the duration of the time necessary for healing. One must also be conservative in any surgical interference before one is certain of the limits of the injury. Suppuration is not common and consequently the degree of toxæmia from an electrical burn is usually not so great as from an ordinary burn of the same degree and extent.

Electrical flash burns of the face are not infrequently followed by traumatic cataract, and occasionally by optic nerve atrophy.

There are no gross lesions within the body absolutely indicative of death by electrical shock. Petechial hæmorrhages in the brain stem and fragmentation of the heart muscle have been described as pathognomonic. There is frequently an anuria, and red blood cells are usually present for the first few days in any urine passed. Leucocytosis is present. There is a blood concentration which may be an important factor in subsequent death, as it is in ordinary burns. The complications are the same as in the case of ordinary burns. The toxæmia, however, is apparently not so severe. The resulting deformities and contractural and cicatricial disability are often very great.

The Cause of Death From Electrical Shock

The cause of death from electrical shock still remains a not absolutely solved problem. There have been two theories:

1. Ventricular Fibrillation, Bourruta, in 1918, claiming that 90 per cent of the deaths were from this cause, and

2. Paralysis of the Respiratory Centre. Jellinek claims that death from electrical shock is only an apparent death and not associated with fibrillation. More recent observations and experimental work seem to show that the deaths are more largely due to respiratory and vaso-motor centre paralysis, or block. At first these centres are refractory to external stimuli, and oxygenation of the blood must be carried on by artificial means, until such time as the centre recovers or death intervenes. Because of the belief that electrical shocks are fatal and ventricular fibrillation is always produced, resuscitation is not started, or is not carried on sufficiently intelligently or long enough to resuscitate the victim. In spite of publicity, occasionally a medical practitioner called on to handle a case of electrical shock is apparently not aware of the necessity of artificial respiration.

In ventricular fibrillation, the respiratory centre is usually not affected. Respirations continue, becoming exaggerated from asphyxia, then fail entirely. In man, they may continue from one to two minutes. Spontaneous recovery from ventricular fibrillation may occur and is probably not uncommon in man. It cannot occur after a longer period than two minutes. Ten minutes is the maximum time that nerve centres can be deprived of blood, and usually five minutes is the standard time allowed. Hence, even in cases of ventricular fibrillation, artificial respiration should be commenced, as there is always a possibility of spontaneous recovery.

In respiratory centre paralysis, the respirations are suspended, the heart continues, the pulse may be feeble and hardly obtainable; there is a great fall in the blood pressure, the skin is moist, cold and cyanotic. The necessity for artificial respiration is apparent. The centre will not respond to stimuli from afferent nerves. The vaso-motor centre is similarly affected. Central stimulation of the cut vagus nerve has no effect on the cardiac centre. E. Grange (1882) was the first to describe a case of death due to industrial electricity and later he, Brouardel, and Garnet, started experimental work to determine the important factors in such cases. D'Arsonval made more extensive researches, and in 1886 advocated that the same methods of resuscitation as are used for drowning should be applied to apparent death from electricity.

A movement has been inaugurated to establish a permanent memorial to the late Professor Adrian Stokes of Guy's Hospital, who died recently in West Africa. The memorial will probably take the form of a Research Fellowship or Scholarship. Professor Stokes died of yellow fever and thus adds one more to the long list of martyrs to science.

XUM

RESUSCITATION AFTER ELECTRICAL SHOCK*

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THE general use of electricity has brought about two special types of injury, *viz.*, that of electrical burn and electrical shock. In the development of the industry, great care has been exercised to reduce these hazards to a minimum. There has been, however, an increase in injuries among non-electrical workers and members of the public, due principally to ignorance of the danger, or to the use of non-approved appliances, or the use of appliances in a non-approved method. In its own work, the electrical industry has used every care in design and construction, has carried out instruction and training of its employees in safe methods, and has interested itself in examination and research as to ways and means to prevent electrical accidents, and as to remedial measures to be put into effect should they occur. In the development of this research, the literature on the subject of electrical shock and resuscitation has received most careful consideration. This literature, though possibly not extremely extensive, yet contains many able papers, a list of the most important appearing as an appendix.

The pertinent points as to the present knowledge of the effects of electrical current on passing through the body may be summed up as follows:—

1. The effect of the shock is greatly increased if the points of contact between the body and the electrical conductors are good, or, in other words, the effect will be greater if wet hands are placed on electrical conductors than if dry hands are placed, hence the fatal shocks in bathrooms from comparatively low voltage.

2. The path of the current through the body has a decided effect on the shock. If a shock be received from foot to foot, the effect will be immeasurably less than if received from head to foot, hand to foot or head to hand. Where the path of the current lies through the medulla or thorax the effect (other things being equal) will be greatest.

3. The amperage of the current passing through the body has a distinct effect on the shock. Hence, with the same condition of points of contact and duration of contact, the effects from higher voltages are greater.

4. The duration of the contact has an effect on the shock, as it is shown that the heart does not beat during the period of contact.

5. The passage of the current through the body may have a permanent effect on the heart. There may be a temporary inhibition, or damage of the heart muscle, or ventricular fibrillation may be set up. The exact nature of these effects is not known and research is needed to clear up the problem.

6. The passage of the current causes a profound paresis or inhibition of the respiratory function. This inhibition is at or near the respiratory centre and may not be permanent. As to the exact nature of the lesion little, if anything, is known.

7. The passage of the current causes an inhibition of the vaso-motor system, particularly the vasoconstrictors. The nature of this inhibition or block is not known.

8. From the time of the passage of the current until the return of the eye reflex, the brain is insensitive to extraneous influences, such as stimulation of the central end of the cut vagus or cut sciatic. Hence, many of the usual tests for life fail.

To sum up: after the passage of the current, the patient is unconscious and not breathing. The pulse cannot be felt at the wrist or temple, and at times the heart beat cannot be heard with the stethescope. Many of the usual tests for life give negative results. The pupils are dilated and the skin cold and moist. At times the body is rigid.

In a patient in this condition, resuscitation is clearly indicated as a remedial measure. By resuscitation, the lungs will be ventilated, venous blood will be forced to the heart and

* Paper read before the Toronto Academy of Medicine, Tuesday, March 1, 1927.

will not be allowed to stagnate in the abdomen as a result of the inhibition of the vasoconstrictor nerves; rhythmic pressure will be maintained, causing a massage of the heart, and having an effect on the return of voluntary breathing. By the ventilation of the lungs and maintenance of the circulation, oxygenated blood is carried to the respiratory centre, and if gross damage has not resulted from the passage of the current or from lack of oxygenated blood over a period, this supply of oxygen to the centre will aid in removing the block.

Immediately on being cleared from the current, the patient is placed in a prone position, the mouth and throat cleared of any foreign substance, and the tongue brought forward. The arms are placed above the head to expand the chest. One arm is bent at the elbow and the head rested on the forearm to keep the mouth out of any dirt. The head is turned on one side, the face being away from the crook of the bent elbow so that the nose and mouth are free for breathing and in a position that they may be easily cleared.

The operator will straddle the patient, the knees in such position that when the operator is in the pressure position, the thigh is perpendicular to the floor. The operator will place the hands on the small of the back with thumbs alongside the fingers and hands turned outward, the little finger resting on the lowest rib. This will place the hands so that they are over the three lowest ribs. As these ribs are not attached directly to the sternum and are flexible, movement of the ribs is obtained with moderate pressure. This movement is greatest if the hands are placed as far apart on the back as is possible without slipping off. (See Fig. 1.)

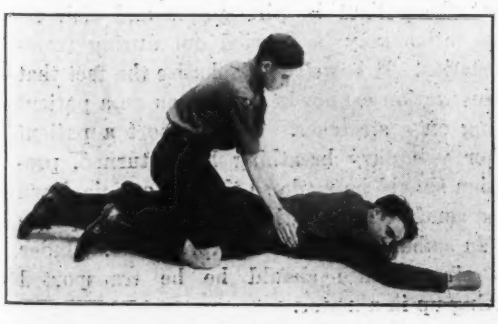

FIG. 1

With the hands in this position, the operator kneels forward until his thigh is perpendicular to the floor and his shoulders are directly over his hands. Care must be exercised to keep the arms straight and rigid in this position. If these instructions are carried out maximum pressure with minimum effort is obtained. (See Fig. 2.)

FIG. 2

When pressure is exerted on the three lowest ribs in this manner, the liver, spleen, and stomach are elevated and so bring pressure on the diaphragm elevating it and thus compressing the chest and causing an expiration. At the same time, during the pressure, blood is forced from the abdomen through the veins toward the heart, thus aiding in maintaining the circulation. This movement of blood from the large vessels of the abdomen to the heart also offsets the effect of the inhibition of the vasoconstrictor nerve system.

The pressure is then removed from the back by the operator rocking back on his knees, sitting on his heels, removing his hands from the back and allowing his arms to fall in a relaxed position of rest. (See Fig. 3.) By the removal of the pressure, the ribs assume their normal position, the liver, spleen, and stomach

FIG. 3

descend, followed by the diaphragm, resulting in an inspiratory movement of the lungs. It is clearly seen that the expiratory and inspiratory movements of the lungs are brought about by the diaphragm in a manner closely approximating the mechanics of normal breathing. This cannot be said of any method of resuscitation except the Prone Pressure Method.

Due to the necessity at times of continuing resuscitation over comparatively long periods, it is important to provide periods of rest for the operator. Even in short cases of from ten to thirty minutes of resuscitation, the operation, due to the movements and to the possible excitement, may be very fatiguing. It is also important to be certain to entirely remove the pressure from the back. The operator is therefore instructed to entirely remove his hands from the back of the patient, sit back on his heels and drop his arms in a relaxed position.

After a pause, he will kneel forward and bring pressure to bear in a similar manner. The alternating of pressure and removal being carried out from twelve to eighteen times per minute. In teaching resuscitation, it is advisable to maintain a rhythm of ten to the minute and during practice to insist on the rate of ten, as the great tendency is to go too fast.

During the continuance of the resuscitation, the mouth and throat of the patient should be kept clear. Every endeavour should be carried out to maintain the warmth of the patient by blankets, hot water bottles, and other suitable means. These attentions, however, must not interfere with the efficient continuance of the resuscitation.

In regard to the use of stimulants by hypodermic during the continuance of resuscitation, little of a definite nature can be said. Many stimulants have been tried, the beneficial results being extremely doubtful. At the present time, there is a feeling developing in the minds of those most closely associated with the treatment of electrical shock cases, that the use of hypodermics militates against the successful issue of the case. Administration of adrenalin directly into the heart muscle, using a needle at least three inches long, may have a beneficial result but even this has not been proved. It may be said that the administration of stimulants by hypodermic is not an important therapy in electric shock cases.

The continuation of resuscitation, if necessary, over long periods, is of the utmost importance. It has been proved that from the time of the passage of the current until the return of the eye reflex, the brain is insensitive to extraneous influences. Hence, as stated above, many of the usual tests for life may fail. There are many cases on record of the successful resuscitation of persons from electrical shock by the efficient application of the Prone Pressure Resuscitation Method over periods of upwards of three hours, during this time little or no indication being given that the patients were alive. "Nothing less than the cooling of the body or the onset of rigor mortis should be taken to be evidence of death."

On the return of voluntary breathing, the operator must endeavour to bring his rhythm into synchronism with the breathing of the patient. It has been found that the voluntary breathing often has the same rhythm as the resuscitation and every endeavour should be made not to interfere with the first feeble efforts. The patient, on recovering breathing after electrical shock, will very often start to struggle and attempt to get up. He must be kept lying down and on no account allowed to rise. As soon as consciousness returns, it is a simple matter to have him lie still, but, before this, force may be necessary. It is quite apparent that with an inhibition of the vasoconstrictor nerve system, if the patient be allowed to sit up or stand up, there is danger of the blood remaining in the large blood vessels of the abdomen bringing about a serious syncope.

If it becomes important for any reason to move the patient before the return of voluntary breathing, this must be done in such a manner that the patient is lying prone and that resuscitation may be carried out during transportation. It is well to emphasize the fact that resuscitation cannot be carried on on a patient lying on a stretcher. To transport a patient after voluntary breathing has returned, provision should be made so that he can lie down in a comfortable position in such a conveyance as an ambulance, truck, or express cart. Under no circumstance should he be transported sitting up in a motor.

In training employees or others in resuscita-

tion, it is important that the effects of drowning, gas poisoning, and electrical shock, be explained in as simple terms as possible. The mechanics of the act of breathing should then be explained using as few technical terms as a clear explanation will permit. The exact detail of resuscitation should then be demonstrated using one of the class as a patient. The class should then be paired off and half the class lie down as victims, the operators being instructed in each step to be taken, in carrying out the resuscitation. After the instruction of half the class, the exchange of operator and patient is carried out and the other half instructed. It is well then to carry out another demonstration, as it assists the class to notice their mistakes. Usually, many questions will be asked about various points. Definite arrangements should be made to have regular practices in resuscitation. The employees in the electrical public utility industry are required to practise resuscitation twice a month. Records of these practices are kept with details of attendance. These records are carefully checked and followed up where necessary. During the practices, the men are taught to change from one operator to a relief operator without losing a stroke or the rhythm. Also, other matters of importance in an emergency are explained.

In the electrical public utility, the employees are often working many miles from the head office and arrangements must be made to efficiently handle any emergency. Clear and explicit instructions are prepared as to telephone advice, to responsible officials, calling of medical help, preparing to care for the patient, and providing consulting advice by telephone. In certain remote plants special supplies are available for the doctor when he arrives. Every endeavour has been made to anticipate the requirements for dealing with the case by the men and for assisting the doctor when he arrives. The doctor can greatly assist by sustaining the morale of the men and by encouraging them in their efforts, as it is well recognized that they very likely will be nervous and excited.

On the afternoon of May 22, 1926, an operator in one of the power houses in Ontario, was cleaning a window and in a moment of thoughtlessness brought his head in contact with a 22,000 volt bus, receiving the current from head to hand and leg. He fell back in an unconscious condition and appeared lifeless. Fellow employees immediately de-energized the bus-bar and surrounding apparatus, lowered the man to the floor, and one of them started prone pressure resuscitation. Other employees telephoned for a doctor to a town a few miles distant, and, although the roads were in very bad condition and there was a very bad hill to come down, other members of the staff brought the doctor to the power house and also brought nurses. At the same time, long distance communication was set up with those in charge of the work in Toronto and with the Medical Consultant. By the time the doctor had arrived, resuscitation had been carried on for sometime and the patient started to breathe voluntarily about thirty minutes after the accident. As a result of consultation over long distance, the patient was put to bed in one of the employee's houses near the power house, under the care of the nurses and doctor, and received the necessary first-aid treatment for his burns. After a few days, it was found possible to move him and with the usual assistance he was brought to the Toronto General Hospital where he has been receiving care under Dr. R. E. Gaby. The details of the progress of the case in the hospital have been given in the paper by Dr. Gaby in this issue of the *Journal*.

This is a simple statement of the handling of a severe case of electrical shock and burns, and it is rather typical of cases that have, unfortunately, happened in various parts of the province.

Where do we stand at the present time in connection with the treatment of electrical shock? As far as is known, the passage of an electrical current through the body at times has a direct cardiac effect, this apparently being either an effect on the heart muscle, or in the setting up of ventricular fibrillation. The exact details in connection with the effect of the electrical shock on the heart have not, up to the present, been exhaustively investigated. Another effect is to cause a profound inhibition or block of the vital centres of the brain, particularly the respiratory centre, the vagus centre and, the vaso-motor centre. By the application of artificial respiration, the

lungs are ventilated, and venous blood from the liver, spleen, and stomach is forced toward the heart. By the continued application of resuscitation, the ventilation of the lungs is kept up until the temporary paresis or inhibition of the respiratory centre passes off, when the breathing becomes voluntary, the procedure may be stopped. One naturally asks: What is the nature of this block in the vital centres of the brain, and what can be done to lessen the time of this profound inhibition or temporary paresis? So far as is known at the present time, nobody has answered these questions. I may be anticipating, but I have great hopes that it will be answered sometime within the next year or so, and I sincerely hope it will be answered in Toronto. This can only come as a result of the close co-operation between members of the Engineering and Medical Professions. If each will bring to the problem the background of his profession, as well as the specialized technique in methods of analysis and control, they will jointly be able to solve what appears to be a baffling problem.

In the meantime, since our men are thoroughly trained in the latest technique, is it too much to ask for co-operation and support?

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THE PHYSICIAN AND THE DRUGGIST*

BY R. E. HARRISON, PH.B.

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THERE are two items of mutual interest to physician and pharmacist, on which I should like to say a few words. The first concerns the correct writing of a prescription containing a narcotic, and the second the revision of the *British Pharmacopœia*. Both have been the subject of discussion at many of our conventions. As you may be aware, the passing of the Dominion Narcotic Act was made necessary by the alarming increase in the abuse of narcotics during and following the war. It is strict and exacting in many respects, and necessarily so, as it is essential that any one who deliberately assists this traffic in any way should be severely dealt with. However, in its application, the Act gives rise to difficulties and inconveniences. It requires that a prescription for a narcotic drug bear in the physician's handwriting the patient's name and address, the date on which it was written, and the physician's signature in full. The initials only of the physician will not suffice. Unless all the above conditions are fulfilled the prescription cannot be legally filled. A druggist hesitates to ask a patient to go back to the doctor and have the prescription properly made out, because of the unfavourable impression such a request would create, and the patient may not know that the

* Read before the annual meeting of the Alberta Medical Association, Calgary, September, 1927.

prescription contains a narcotic. If the druggist was allowed to fill in the information omitted, the fault could easily be remedied, but the whole prescription must be in the doctor's handwriting.

Again, the doctor hurrying to make a call finds that he requires some morphine tablets. He calls at the drug store, and may be annoyed by the delay caused by having to write and sign an order for them. Such instances are occurring daily, and as a druggist I desire to bring this Dominion law to your attention, and to state that its requirements are important and necessary. Codeine has fortunately been taken from the list of narcotics, and this has reduced by about 50 per cent the number of prescriptions containing legal narcotic drugs. There are many ways in which the druggist can make things easier for the doctor, and it is proper that he should, but the writing of prescriptions for narcotics is not one of these. Four things are necessary: the patient's name and address, the date and the physician's signature in full.

The second item is the *British Pharmacopœia*. As you know the *Pharmacopœia* is revised about every ten years; the last edition was published in 1914. The work is done by a permanent committee appointed by the General Medical Council of Great Britain. This committee is working more or less all the time. In the autumn of 1925 a letter was received from the Secretary of the State inviting the two professions in Canada to submit suggestions for any changes desired in the next revision. The Secretary of State forwarded the invitation to the Canadian Medical Association and the Canadian Pharmaceutical Association. The result of the invitation has been that these bodies have gathered from their members a great many suggestions which have been considered and condensed by a joint committee, and the final report has been submitted to the Government with the request that it be forwarded to Great Britain. A permanent Canadian Council has now been formed, of which representatives of the Canadian Medical Association, the Pharmaceutical Association and the Government are members. I bring this to your attention for a number of reasons. It is a distinct advance in the status of Canada to receive recognition from Great Britain in this important matter.

Although, both medical and pharmaceutical students become fairly familiar with the *Pharmacopœia* during their college term, you will agree with me that after examinations are over very little time is spent by the average medical student in studying this very important volume. There is a tendency to forget our old friend *nux vomica*, and remember some proprietary preparation, the actual formula of which is seldom recalled. I do not wish to be understood as suggesting that a physician's field of remedies be restricted, but I believe it to be a fact that the most successful physicians are those who think out their prescriptions item by item; and that if the doctor takes the easier course of using a proprietary drug he will gradually become mentally lazy and less efficient.

Another suggestion that I wish to make is that, in compounding the active ingredients of your prescription, reasonable consideration be given to the vehicles employed. From a financial standpoint, the druggist should have no objection to H_2O, but as a matter of practice its use is at times unsatisfactory, especially when employed with tinctures of high alcoholic content, or with small quantities of syrup when fermentation is liable to ensue. The elixir of orange will be found very satisfactory for many prescriptions. It renders them more palatable and is compatible with almost everything. Syrup of tolu and syrup of wild cherry (*syrupus pruni Virginiani*) are also good. Take up with your druggist the matter of vehicles, and I am sure that you will receive suggestions of value.

XUM

NEGATIVE BLOOD CULTURES IN ACUTE RHEUMATIC FEVER

By Ralph Lynch, M.D.

Pittsburgh, Pa.

From the Clinic of Dr. C. P. Howard, Montreal General Hospital

IN 1925, Clawson[1] reported that he had isolated streptococci from the blood of more than 50 per cent of his cases of acute rheumatic fever. In 1926, Clawson and Bell[2] stated that they had obtained pure cultures of streptococci from cases of rheumatic carditis, and when these organisms were injected into rabbits they produced endocarditis, grossly and microscopically similar to human endocarditis.

These results, from careful workers, have renewed the interest in the streptococcus as the specific causative agent of acute rheumatic fever. At Mercy Hospital in Pittsburgh, Maclachlan and Permar[3] adopted Clawson's technique and tried, without sucess, to demonstrate streptococci in the blood of rheumatic patients. It should be said, however, that only a small series of cultures was done and, despite their negative findings, both Maclachlan and Permar remained impressed with Clawson's work.

As rheumatic fever is regarded as severe in the Montreal district, it was thought worth while to attempt a confirmation of Clawson's work in this hospital. Fifteen typical cases, seen between October, 1926, and June, 1927, were selected for study. Each case had at least one culture; some had more than one. A total of twenty cultures was done on the group of fifteen patients.

The method of blood culture described by Clawson,[1] may be summarized as follows:

The culture is done at the height of the fever. Fifty c.c. of blood are taken from the vein, put into two large test tubes and allowed to clot. The tubes are then rimmed and the clotted blood put into a flask containing 250 c.c. of 0.2 per cent dextrose beef infusion broth, with reaction of pH. 7.6. Incubation at 37° is continued for long periods. The smear is rarely positive before the fifth day of incubation; it is usually positive about the tenth day; some are positive as late as the thirtieth day.

This technique was followed as closely as possible. It was not always feasible to take the blood at the height of the fever, but in all cases there was some fever at the time the blood was withdrawn. In three instances this fever was not over 100°; in all others the fever was moderately active.

The results were most discouraging and nothing but negative evidence can be offered. It proved very difficult to keep cultures longer than fifteen days without developing contaminations.

Five cultures showed no growth after thirty or more days of incubation. Two, showing no growth, were discarded, through an error, one at the sixth and one at the ninth day of incubation. The remaining thirteen cultures were contaminated at various stages by such organisms as moulds, *B. subtilis* and *S. albus*. The contaminations appeared at the following intervals of incubation: five, after the 15th day of incubation; two, between the tenth and fifteenth days; five, between the fifth and tenth days; one, before the fifth day.

Conclusions

Attempts to demonstrate a bacteræmia in acute rheumatic fever were not successful. The series reported is so small, and the incidence of contaminations so high, that a refutation of Clawson's work is neither justified nor implied.

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Case Reports

SOME RARE ABDOMINAL TUMOURS; SARCOMA OF STOMACH; HYDATID CYST OF LIVER; HYDRO-SALPINX

By R. H. L. O'Callaghan, M.D., F.A.C.S.

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I feel I am justified in reporting these three cases of rare abdominal tumours on which I have operated during the last six months. In a large clinical centre they may not be unusual, but falling, as they have, to the clinic of one man in a small city they are of interest.

Case 1*

Mrs. Mary C., No. 46511, age 54; has no children, and has had no serious illnesses. During the last few months she suffered from distress after meals with belching and eructations, which was gradually becoming more severe. During the last three weeks she had been vomiting, but blood had never been seen. She thought she noticed dark coloured stools on some occasions and had lost weight, but did not know how much. Last week she discovered a lump in the abdomen which had been growing very tender to the touch and hurt when walking.

Examination.—The patient was a sick-looking woman of poor colour, complaining of constant pain. The abdomen was scaphoid, moving freely. A mass, the size of a grape fruit, could be seen at the level of the umbilicus in the left quadrant, which moved slightly on breathing. It was very tender to the touch, appeared fixed, and was dull on percussion. The spleen was not palpable; the kidneys appeared to be normal. The urine was negative; bi-manual examination afforded negative results. An examination of the blood gave the following results: red cells 3,000,000, white blood cells 13,000, hæmoglobin 80 per cent, polymorphonuclears 78 per cent. The chest and other systems were negative.

The diagnosis was an inflammatory mass, possibly diverticulitis. No x-ray examination could be made on account of the acute condition. Immediate laparotomy disclosed a large tumour of the stomach, which had greatly displaced this organ downwards and to the left; and a few omental adhesions to areas were seen which were almost perforating. The tumour involved the whole of the lesser and greater curvatures near the pyloric end. No lymph nodes were palpable. It was decided to do a posterior gastro-enterostomy to give relief, as the patient's condition was too serious to do a resection. A section was taken from the growth.

The result of the operation was good. She gained weight and remained free from pain. The diagnosis was sarcoma of stomach. As the husband wished, if there was any hope, to have a resection done, this was undertaken two weeks later. It proved to be difficult owing to fresh adhesions. The patient stood the operation well, but during the second week developed a gastric fistula and died three weeks later.

Remarks.—Sarcoma is a rare tumour of the stomach. The diagnosis is rarely made before the operation. Out of 27,250 laparotomies at Rochester, Minn., eight sarcomata were found. Out of 3,500 sarcomata Tigler found only four occurring in the stomach. In 1914, there were 157 cases reported in literature. Sarcomata vary in size, and may be very large, as in the present case, and undergo degeneration readily. They usually involve the pyloric end, but unlike carcinoma do not usually cause a stenosis, and therefore do not come to the physician early. They may pull down the stomach and be mistaken for ovarian or other tumours. They are slow to metastasize, and if resected give good results. Usually they are slow in their growth, but on the other hand they may be very rapid. Perforation is apt to occur, especially in the round-celled type. Blood in the stools is a common symptom. They do not as a rule produce the severe gastric symptoms of carcinoma, but owing to their bulk usually give a demonstrable mass earlier.

* Referred by Dr. Arthur H. Mann, of Olds.

CASE 2*

Miss P., Case No. 44316, age 29, telephone operator, was born in England and was well until nine years ago, when she became ill and was operated upon by Dr. McDougall of Halifax for an echinococcus cyst of spleen. Drainage took place for eight months. She picked up after coming west, and had good health until the last few months, when she noticed her upper abdomen was enlarging very slowly. There was practically no pain, but increasing discomfort and difficulty in breathing. During the last month she seemed to have so much pressure after her meals that she became nauseated, but did not actually vomit. There was no jaundice nor at any time any acute pain. She did not think she had lost weight. During her early life she had not come into contact with dogs and they never kept one in their house. She had never been in any foreign countries; only in England and Canada.

Examination.—A frail-looking woman, slightly anæmic, and appearing to have distress in breathing. Not jaundiced. She presented an extraordinary appearance lying down with the trunk exposed. The lower chest was greatly deformed; was barrel-shaped and the xiphoid was pushed out of place. This barrel-shaped deformity extended to the umbilicus. On palpation, the lower chest wall did not give, and seemed to be pushed forward under great pressure. The upper abdomen was very tense, and gave a feeling of fluid under pressure. Percussion of the chest was negative, except on the lower half anteriorly, about on a line with the normal liver dulness; there were no breath sounds heard. The heart was displaced markedly to the left. There was dulness on percussion over the whole of the prominence. The liver border extended a hand's breadth below the umbilicus. There was a large scar on the left side of the abdomen. No thrill was felt. Blood examination was negative. Urine was negative. Diagnosis was made of an echinococcus cyst of the liver, and an exploratory operation advised.

An incision was made from the xiphoid to the umbilicus. A huge liver presented, filling the whole upper abdomen and extending into the pelvis, with a large definite cystic area immediately under the incision. Dense adhesions walled off the splenic area. The area was carefully packed off and a trochar introduced with suction. 2,200 c.cm. were evacuated, taking care to keep any leakage away from the abdominal cavity. After closing this puncture, the cyst was gradually sponged out of the liver without any difficulty. The cavity was then wiped dry and swabbed with mercurochrome; the liver surface was sutured over and closed without drainage. Recovery was excellent.

Remarks.—Hydatid cyst is very rare in North America and England, but on the other hand is common in Australia and Iceland; in South America it is becoming a real menace. In the human being cysts occur in the following percentages: liver, 70; lungs, 10; elsewhere 20.

Until a few years ago, we depended for diagnosis on the history of the case and the clinical signs of a slowly growing cystic swelling. Sometimes a cyst suppurated and burst externally, discharging its tell-tale contents. There is no mistaking hydatid membranes or scolices for anything else on microscopic examination. The hydatid thrill, though pathognomonic when present, is a sign of extreme rarity. The diagnosis by exploratory puncture, though easy, is fraught with danger and is universally condemned.

The skin reaction of Casoni. Two or three drops of fluid taken from the cyst of a sheep are injected through a fine needle, with the usual precautions, into the skin of the arm or thigh. If the reaction is positive, the site of inoculation in a few minutes runs through the changes of an urticarial wheal. The white raised patches attain the size of a shirt or collar button, and are surrounded by a little zone of erythema.

Treatment.—Drugs of all kinds are useless. Radiotherapy has not given results that inspire confidence. In some cases the cyst may exist in the body for years without producing any ill effects.

Ordinarily, operation is the only cure. Two operations are recommended: opening the cyst and draining (Lindemann's operation), or marsupialization, with secondary immediate closure of the cyst after evacuation of the contents, no drainage being employed, (the Bond

* Referred by Dr. Arthur H. Mann, of Olds.

operation). A point to be emphasized in all operative treatment is the necessity of safeguarding the cut tissues and adjacent cavities from contamination.

CASE 3*

Mrs. S., age 35, married, children. The patient had been well until the present illness. She was taken suddenly ill with acute abdominal pains and vomiting. Pain was central at first, but settled down to the left side, and became very severe. Menstrual periods normal. She had had no previous attacks. When seen twenty-four hours after the commencement of the attack, she looked very sick with poor colour, shallow respirations, and the skin clammy and moist. She appeared to be shocked. Pulse full, 120. Temperature, normal. Enemas were effectual. The white blood cell count was not taken. Examination of the chest was negative. The abdomen moved freely. On inspection, a fullness could be seen in the left lower quadrant; the upper level reaching to the umbilicus. On palpation, the abdomen was soft, except over the area of a mass in the left lower quadrant, where there was definite resistance and some rigidity. This mass was globular in shape, appeared to be fixed, and was quite tender. Bi-manually, the uterus was in good position and small. The lower pole of the mass could be felt and appeared to be continuous with the body of the uterus. The right side was negative. A tentative diagnosis of cystic ovary with torsion of the pedicle was made, and immediate operation was advised.

Operation.—Midline incision. Free fluid was found in the abdomen. A large cystic tumour was carefully delivered. The whole cyst with its pedicle was quite black. The pedicle was thick and twisted three times. On delivering the tumour, it was found to be a large hydrosalpinx from the right side. The ovaries were both normal. The right tube was removed and the abdomen closed. Convalescence was normal.

Remarks.—The first case of this type was reported by Bland-Sutton in 1891. Eastman in a recent article reports only 91 cases in the literature to date. Roeder has made an observation that although this condition simulates so closely an ovarian cyst with a twisted pedicle, the patients never have as much shock. The same author reports that this rare condition usually affects the right tube, as in my case, the tumour, however, lying on the left side.

* Referred by Dr. Clark of Didsbury.

GOITRE AND PREGNANCY

By J. R. Dean, M.D.

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The following case is of interest, because of the practical suggestion it involves.

Mrs. P., was a farmer's wife, aged 32, healthy and robust, who had suffered from no illnesses except influenza in 1918, but had, however, a simple goitre of moderate size. Her husband also a strongly built man who has always been healthy had a less marked simple goitre.

Six years ago she gave birth to an anencephalic monster. In this labour she was attended by another physician in a locality about 50 miles distant from this district. Sixteen months ago—two months after her arrival here—she gave birth to a child having a defective condition similar to the previous one. In both cases the infant expired a few moments after birth. Previous to her arrival she had taken treatment for her goitre, but continued it for a short period only.

Iodine medication was prescribed shortly after this second birth for both the husband and wife, and as a result the goitre in both cases after several months nearly disappeared, and one week ago there was born a healthy boy weighing eight and one-half pounds with no mark of any deformity.

Although there seemed to have been quite a number of simple goitre cases in this district, I had paid no attention to iodine medication in connection with maternity cases until I observed in a certain percentage of births that these infants were born with a slight enlargement of the thyroid gland; in two cases there was a very marked increase in size. The older children in these two families also had well developed goitres. During the last four years I have given some form of iodine during the last three to four months of pregnancy. This has been the only practical period, as it dates from the time

when one sees the prospective cases for the first time for the prenatal care. I believe, however, that in a goitrous district the correct course would be to treat both parents, beginning even a short period before conception and continuing iodine medication during the period the fœtus is developing. It is quite likely that one would see fewer cases of congenital adenomata and could perhaps completely eliminate simple goitre. I say this because I have not seen a thyroid enlargement among the children born to mothers in this district, when the mother has been so treated in the later months of pregnancy during the last four years.

BLOOD TRANSFUSION IN EMPYEMA

By Daniel McLellan, M.D.

Vancouver, B.C.

C. A., aged 22 years, single, a painter and decorator. *Family history.*—Father died at the age of 65 of paralysis after an illness lasting nine years; mother is living and well; one brother and three sisters living and well; one died of erysipelas following appendectomy. *History.*—Was never sick since childhood until December 24, 1926, when he took a chill while shovelling snow. He cannot remember very much as he was delirious part of the time. He was treated at home, and was under the care of a day and a night nurse part of the time, then a night nurse only. About January 6, 1927, Dr. W. aspirated fluid amounting to about a quart from the chest. Whether this was clear fluid or pus, I am unable to state.

He was admitted to St. Paul's Hospital on January 12th, and on January 13th underwent an operation for resection of the seventh rib on the right side. A tube was inserted; there was no irrigation. He was discharged from hospital in seventeen days with a still copious discharge of pus from the wound. He was at home about a week when his attending physician died and on February 18th I was called to see him. A weak iodine solution was used daily as an irrigation but brought about no appreciable diminution in the amount of pus which remained very copious. On March 23rd there was a rise of temperature with pain in the anterior of the chest about the level of the fourth rib on the left side.

He was admitted to Bute Street Hospital, and his drainage tube was changed every other day; no irrigation was attempted. His temperature subsided and the condition improved somewhat, but the discharge of pus continued unabated. He was discharged from Bute Street Hospital, April 6th.

The condition remained unchanged until May 11th, when there was a hæmorrhage from the open wound, in amount estimated at about 8 ounces. From this time on his condition gradually became worse until May 17th, when I had him taken to the Vancouver General Hospital.

He was at this time in a very weak and nervous condition; toxic arthritis had set in in the ankles and wrist joints, his eyes were blood-shot and on both sides of his neck were erythematous nodes. The prognosis looked so unfavourable, that I told his relatives I was not very hopeful, but proposed a transfusion of blood. After proper cross-agglutination his brother acted as donor. No blood count was made as at the time I only hoped to give him a temporary stimulation; 280 c.c. whole blood were given him by direct transfusion.[1]

The results were surprising. In 24 hours, pain had left the joints; his eyes were clearing and his whole condition was improved. In 48 hours the joints were practically well, and the erythematous nodes were disappearing. By the end of a week there was a marked decrease in the discharge. Dakin's solution was being used for the irrigation, but Dakin's solution was being used on three other cases in the same ward without such results.

On May 25th, a second direct transfusion was given from the same donor; this time 300 c.c. whole blood. By May 29th, twelve days from the first transfusion, the joints were absolutely well, the eyes were clear, the erythematous nodes had entirely disappeared, and what I had not counted on at all in suggesting blood transfusion, the discharge of pus, which had persisted since January 13th, had ceased and the wound was practically healed. He walked out of the hospital on June 10th. By July 14th he weighed 151 pounds, almost his original weight, a gain of 39 pounds in 53 days. He is well and resumed his work on September 8th.

Reference

1. McLellan, D., A new blood transfusion apparatus, *Canad. M. Ass. J.*, 1925, xv, 866-867.

A SEVERE AND EXTENSIVE BURN TREATED WITH SOLUTION OF TANNIC ACID

By John Hunter, M.B.

Toronto

A young girl received a very extensive and severe burn from an explosion of gasoline. The lower third of the face, anterior and lateral surfaces of neck, anterior and inner surfaces of both arms from shoulders to wrist, and both surfaces of hands, and fingers, with smaller areas on hip and around ankles were involved. The degree of injury varied from a pathological hyperæmia of the skin on the face and neck and destruction of epidermis on hands and fingers, to charring of muscle tissue and destruction of hair follicles and sweat glands, especially on the inner surface of right arm, and anterior surfaces of both forearms. The patient suffered severely from shock.

The fire brigade arrived first, as the room was on fire, and they applied a picric acid dressing as "first aid," which a young physician removed, and substituted a carron oil dressing. This was renewed next morning, after which the case came under the writer's care as family physician. The carron oil dressing was used a third time, but the pain in changing the dressing was so great, and the discharge so profuse that the patient was completely exhausted. The carron oil was immediately discarded, the wounds cleaned with sterile gauze, and a solution of tannic acid (2½ per cent) sprayed on, sufficient to procure a coating one-quarter inch thick. The spray was used when needed to close any cracks in the dressing. No bandaging was used, and no water or oil allowed to come in contact with the dressing. The limbs and patient were placed in the most comfortable position and protected by a sheet. The tannic acid dressing was allowed to "peel off" itself, which took about three weeks to complete. Pain was promptly relieved, and there was no more distress and fatigue from changing the dressings. The profuse discharge was greatly lessened, and although there was considerable pus from several deep abscesses in the more deeply charred tissues, yet these cavities filled up quickly, and were covered with epidermal cells quite as soon as the less injured tissues were. The writer was greatly perturbed, as this was his first experience with tannic acid, when he saw pus oozing out from under the dressing, but his fears were groundless, as the tannic acid either disinfects the pus or inhibits its toxic effects.

The photograph (Fig. 1) was taken when the tannic acid dressing had been on two weeks. The healthy appearance of the new epidermis is seen where the dressing has peeled off. The more deeply charred portions presented healthy, clean, raw surfaces when exposed. These were dressed with sterile ointments. Several surgeons suggested skin-grafting, but this was positively refused by the patient, and her decision was in perfect accord with mine. I believed that if physiological hyperæmia could be maintained by heliotherapy and electrotherapy the epithelial cells would meet and a healthy integument be formed. This result was obtained over every portion of the affected tissues. The new integument over the more deeply charred tissues is of a darker colour than the normal skin but very smooth and dry as hair follicles and sweat glands were destroyed. There are no contractions, and the normal physiological functions of arms and hands are being rapidly acquired.

Fig. 1

Conclusions.—The medical attendant, after rendering first aid in severe burns should concentrate all his knowledge, wisdom, and experience on the conservation of the life of the

patient. The great danger is not from the extent of the burn but from the overwhelming of the vital powers by the shock, and later by the more deadly effects of the flood of toxines being absorbed from the decomposing tissues. Concentration on local treatment to the neglect of the patient has added greatly to the mortality list in severe burns. This patient was treated at home, and the writer begs the indulgence of the reader for permission to make a brief reference to the treatment used in order to stress the vital importance of the care of the patient. Typewritten instructions were prepared for guidance of nurse and family so as to secure efficient team-work. Shock was minimized by stimulants, heat, and rest, and the functions of the thoracico-abdominal viscera were fortified against the flood of toxines from the decomposing tissues in the burnt areas by means of diathermy. Dr. Crile, of Cleveland, stresses the great value of diathermy in sustaining the temperature and functions of the liver during abdominal operations, and it is equally valuable in its action on the liver in antagonizing the toxicity of the blood in the case of severe burns. The patient, just as soon as the weather was warm enough, was transferred to the lawn, and the affected areas gradually exposed to the sun's rays. This heliotherapy was of great value, both to the patient, and in the healing of the wounds.

Fig. 2 shows the result at the end of the fourth month but the right arm is now (sixth month) about as slightly marked as the left one.

FIG. 2

Tannic acid is *par excellence* the drug for use in dressing burns. A teaspoonful of the powder is dissolved in a tumbler of water and sprayed on to form a thick coating. No bandaging or dressing is desirable. Prompt relief of the pain follows. The amount and toxicity of the discharge is lessened. The patient's comfort and well-being is greatly improved; and after the dressing peels off a clean healthy surface is left.

WHEN?

When our enterprising merchants
Purchase only wares that sell,
And miladi in her styleshop
Chooses fashions just as well,
Always pleasing, sense displaying,
Suiting age and youth the same,
Then the doctor's diagnosis
Will be right in fact and name.

When the farmer, skilled in culture,
Sows what yields invariably,
And his grading is accepted
By the miller readily,
When producer and consumer
Each believes the other right,
Doctors' knowledge will be final,
Pain will vanish as the night.

When decisions of the banker
Meeting client's urgent claim
Or the action of investor,
Never lead to loss or blame.
When the judges render verdicts
No defendant can undo,
Then the doctor's diagnosis
Will be absolutely true

When the pulpits, pews divergent,
Fearlessly expound the word,
Nought but sane interpretation
By the faithful ever heard,
And the legislating statesman
Forecasts rightly people's views.
Then a faulty diagnosis
Will be chronicled as "News".

When fond parents see their children
Realize the goals they planned,
Frozen facts and ardent theories,
In accord forever stand.
When the teacher's backward student
Follows aptly wisdom's call,
Human ailments being standard,
Won't be diagnosed at all.

When the brotherhood of nations
Ceases friction's constant toll,
And employee with employer
Plays endeavour's highest roll;
When patrician and plebeian
Fraternize as children free,
Every patient, ills regardless,
Will fulfil his destiny.—W. G. HUNT, *Calgary*

Editorial

THE COST OF MEDICAL CARE

"To clear ourselves of the honest opinion of many that we are retarded socially, backward in organization and infantile in our civilization as compared with contemporary western European nations, at least, in the serious consideration of sickness and its bearing upon our economic progress, a five-year committee was forthwith created under the leadership of Dr. Ray Lyman Wilbur, from whom we may expect thorough and honest searching and declaration of facts, so that we may know 'what to do and how to do it.' "

THIS paragraph concludes an article contributed to the Survey* by Dr. Haven Emerson, Professor of Public Health at Columbia University. The article records briefly the proceedings of a recent conference at Washington on the economic factors affecting the organization of medicine. Prefacing the programme of the conference were Lincoln's words: "If we could first know where we are, and whither we are tending, we could better judge what to do and how to do it."

From Dr. Emerson's graphic account of the proceedings we cull but a few of the arresting statements made by different speakers. To Dr. Louis I. Dublin, of the Metropolitan Life Insurance Company, he attributes the estimate that from 4 to 6 per cent of the total income of American citizens is spent on illnesses—a sum amounting to from $3,000,000,000 to $4,000,000,000 anually. Apparently physicians get about half this amount, dentists about a fifth, while the balance goes to hospital and nursing care, medicines, dressings, appliances, etc. (This would make the average annual income of physicians more than $10,000. Can it be true? Ed.). According to the Bureau of Labour, medical costs average $60.00 per family per year. The Detroit Family Welfare Agency finds that workmen's families pay $80.00 per year, and the same figure applies to employees of the Metropolitan Life Insurance Company. "Baffling problems in diagnosis, long illnesses, operative and surgical costs, face the family with incalculable expenses often threatening financial catastrophe. Hence the great increase in dispensary cases, until now ten per cent of the treatment of the sick is in dispensaries throughout the country."

Leo Wolman stated that "ninety per cent of us have annual incomes of less than $2,000," and that the medium income is at present somewhere between $1,350 and $1,400 per year. And Michael M. Davis declared it to be the rule that the lower the income the greater the amount of sickness, and that with fully a quarter of the nation's families the cost of sickness is a burden too great to be borne. Dr. Davis is further credited with the observation that inadequate medical service is "a cause of unnecessary sickness by omission or commission."

When to all this we add the contention of Dr. C. C. Pierce, of the United States Public Health Service, that more than a third of all sickness is entirely unattended, and that less than forty per cent of the people have any kind of dental care, the evidence appears convincing that the situation across the border demands consideration and some change. Even if allowance be made for a possible misinterpretation of statistical data, it is evident that a serious problem exists—one which is of deep concern to the medical profession. And our own country does not differ so greatly from that of our neighbours that we can feel sure of a much better situation in Canada. We shall, therefore, follow with interest the investigations of Dr. Wilbur's five-year Committee, and await as patiently as we can its "declaration of facts." From a source other than Dr. Emerson's article, we learn that the Committee is already at work, with a well defined programme, and that towards its annual budget of $40,000, the Twentieth Century Fund and the Milbank Memorial Fund are contributing $10,000 and $15,000 respectively.

In the meantime, however, should not

* June 15, 1927.

XUM

attention be given to Dr. Pierce's statement that more than a third of all sickness is entirely unattended? Every practitioner knows all too well that many persons, who come for treatment only after illness has passed the stage of curability, excuse their delay on the ground of "medical costs." If it were to be made known that periodical medical examinations are within the reach of even modest purses, might not a large part of Dr. Pierce's "third" be reached in a way which would be mutually profitable to them and the medical profession?

"Asoka is grieved to see how many people die of disease that can easily be cured or prevented." This is the interpretation of a portion of an edict of an enlightened Indian king, of the third century before Christ, which provided for the establishment of hospitals and for popular instruction in the preservation of health. From remote time, occasional references are to be found in literature to more or less ephemeral, and localized attempts to interest the public in the care of everyman's greatest asset. Recent years have witnessed a widespread awakening, and a rapid extension of preventive endeavour with an astounding betterment of morbidity and mortality statistics. While some timid souls have feared the effect upon the doctor's income, the profession as a whole has given its support to all properly directed public health work, and has stood behind it, despite occasional irritations and annoyances from ill-advised, though well-meaning, enthusiasts, both lay and professional. This attitude has not been of disadvantage to the profession. Unfortunately too much of the health publicity of to-day comes from sources which are quite unauthoritative. The syndicated article may be written more for the sake of gain than for the sake of humanity, and it is just possible that this might be said of some articles prepared under professional direction. We may well ask ourselves if we do right in refraining from giving to the public established facts relative to health preservation, and more particularly the advantages of periodical examination by competent physicians. Articles for the lay press, written by well qualified members of the profession, and endorsed by a representative committee, should be accepted as authoritative, and should also be credited as motivated by a sincere desire to further the public weal. It there be hesitancy about the ethics of such a procedure, there is still left to every physician the opportunity of doing a real public service by impressing the importance of the early recognition of disease upon each of his patients. Already many persons have found the moderate fee asked for an occasional "health examination" to be incomparably less burdensome than a prolonged, preventible illness, and physicians who make such examinations with conscientious thoroughness have found a ready way of enlarging their clientele.

W. H. HATTIE

THE DARWINIAN THEORY

THE Presidential Address of Sir Arthur Keith, delivered recently before The British Association for the Advancement of Science, and entitled "Darwin's Theory of Man's Descent as it stands to-day," has attracted widespread attention, not only in the scientific but also in the lay press. This is due in large part, no doubt, to the acknowledged pre-eminence of its distinguished author in comparative anatomy and anthropology, but, perhaps, none the less to the perennial interest which the problem of man's origin has for the scientific and near-scientific mind. Indeed, there could hardly be any more important field of enquiry, connoting, as it does, much more than the study of his physical frame—his mental and spiritual characters, his final destiny.

Sir Arthur, in his development of his subject, did not bring out any fact hitherto unknown to those working along the same or similar lines, but still did most useful service in correlating the facts as they stand to-day; in taking stock, as it were, of

our present position. The conclusion is, that Darwin's theory, while necessarily imperfect as he originally propounded it, has been immensely strengthened by later discoveries. If new factors, the result of fuller knowledge, have been introduced to explain, for example "variation", yet, the net result has been to render more impregnable Darwin's position. The doctrine of evolution, if indeed it has not yet attained the dignity of a mathematical demonstration, has so many points in favour of it, that little doubt as to its correctness exists in the minds of those competent to judge. The Darwinian theory, as it is most generally understood to-day may be stated thus:—Existing species of plants and animals have become what they are by a process of evolution, by descent with variation, and this process has been continuous from the dawn of life until now. We may add, that it will continue into the future.

The elucidation of this most complex problem has been rendered more difficult because of certain errors into which scientific workers have fallen, some of which errors Sir Arthur Keith points out. The first is, that in tracing man's descent, we expected to meet with a series of graded forms which would trace him back along a straight path to an anthropoid ancestry. But research has shown that in remote times the world was occupied by races showing an even greater diversity than those of to-day, and that even then the same process of replacement was at work. "We have to thread our way, not along the links of a chain, but amongst the meshes of a complicated network." A second error is, that too little attention has been paid in the past to the conditions existing among the living anthropoid apes. Had this not been so, we should have realized earlier that, as he goes backwards in time, mankind becomes broken up, not merely into numerous and separate species, but even into distinct genera. "It is amongst this welter of extinct fossil forms that we have to trace the zig-zag line of man's descent." A third mistake lies in the expectation that man's evolution would pursue an orderly file of stages, that every part of his body—skull, brain, jaws, teeth, skin, body, arms, and legs—would at each stage become a little less ape-like, a little more man-like. This is not so. Evolution in structure has been regional and irregular.

The chief points in favour of the doctrine of the evolution of man from an anthropoid stock may be summarized as follows: (1) The resemblances, anatomical, embryological, and psychological, between man and the anthropoids which transcend those that exist between the primates and the lower mammals. In this connection it may be stated that evolution in man and the higher apes has finally taken divergent paths: man has become, or remained, an earth-dweller, and has become differentiated along the lines of brain and intellect: the anthropoid has become a tree-dweller, and has lagged behind in mental development. (2) The method of placentation is identical in the case of man and the anthropoids. It is different from that in the lower mammals. Thus we find the same "evolutionary postmarks" in the bodies of man and the anthropoids. (3) The precipitin test of Nuttall, as applied to the blood of man and the anthropoids, has proved the close affinity of these two species. (4) The bodies of man and the anthropoids present the same reaction to infection. (5) The discovery, since Darwin's time, of several forms of "anthropoid" men, notably *pithecanthropus erectus* and the Piltdown Man. Of the fact of evolution, therefore, there can be no doubt. In regard to the course of man's evolution we cannot say as much. The exact path will only be traced, if ever, when we get more information from the geological side.

The discovery of hormones in 1904 by Starling promises to throw a flood of light on the problem. In these chemical messengers we have, probably, the oldest and most important way by which the functions of the various organs of the body are co-ordinated. Here we find the solution of many of those puzzles which Darwin had, perforce, to leave unsolved, including that of "correlated variation." The associated doctrine of "internal secretion" now established firmly on the basis of experiment, explains many striking deviations from the normal. Finally, the more extended study of heredity, together with the other modes of investigation just mentioned will, it is

XUM

hoped, enable us to write the biological history of our race, and, more than that, to get at the 'how' and the 'why' of the various steps in the development.

All are aware that in the days of Darwin, and his great protagonist Huxley, there was determined opposition to the promulgation of an un-Biblical and, therefore, "heretical" theory of man's origin. Sir Arthur Keith refers to the change of heart that has come over the scientific and religious world. Most people now, if not convinced Darwinists, are at least willing to keep an open mind until the full proof be forthcoming. It is true that a protesting voice is heard here and there, and, particularly, in certain parts of the United States, the "monkey damnification of mankind" is denounced as contrary to natural and revealed truth; it has even been sought to make the teaching of evolution a penal offence. Such misguided people are not only attempting to stifle freedom of thought, but expect to stay the progress of time by holding the hands of the clock. The conflict between science and revealed religion, whether real or apparent, might be more easily resolved if sufficient consideration were given to the following points. First, truth is truth and is absolute. If one "fact" appear to contradict another "fact," then, either, one of the "facts" is not a fact, or, our reasoning is faulty. Truth cannot be incompatible with itself. Again, in pitting the facts of natural science against those of religion, the kind of evidence that is admissible is not the same in each case. Natural science cannot prove or disprove any proposition in metaphysics. On the other hand, philosophers, when they refer to natural phenomena must do so in the language, and according to the knowledge of their own times. Prof. J. Arthur Thomson, in his recent delightful lectures in Montreal, under the auspices of the Associated Theological Colleges, put the matter well in this way. Science attempts to discover facts. It aims at reaching the lowest common denominator. Philosophical religion attempts to explain. It seeks the highest common measure. The two fields, therefore, are incommensurate. Were the weeds of language and the mists of thought cleared away from the path, it should be possible for the opposing schools to meet on common ground. What is wanted is a little more charity, and a willingness to face facts fearlessly. An appreciation of the order and beauty of Nature cannot make a man irreligious. To quote Dr. Thomson in his closing address:—"It is not learning that we need so much as love, though it is often true that he loveth best who knoweth best."

A. G. NICHOLLS

THE ETIOLOGY OF SCIATICA

PROFESSOR VITTORIO PUTTI of Bologna, the eminent Italian orthopædic surgeon, delivered a few months ago the Lady Jones address at the University of Liverpool (*Lancet*, July 9, 1927). His subject, "New conceptions in the pathogenesis of sciatic pain," may be held to give his imprimatur to views that for some time have been held and taught on this side of the Atlantic. The study of sciatica is of great antiquity and its literature colossal in amount. Sir William Gowers, the eminent English neurologist, towards the end of the last century laid down the rule that sciatica was a neuritis and had nothing to do with bones or joints. This theory flourished for long and is still dying hard. Then, as the x-rays developed, it was found that many cases of sciatica were associated with arthritic changes in the lumbar spine. Orthopædic surgeons were stimulated by this, and the theory of referred pain of bony origin arose; namely, that the sciatica was due to irritation in an arthritic spine, the pain exploding, as it were, along the near by and convenient sciatic nerve. Of late years attempts have been made to improve on this referred pain theory, and to find the exact source, if possible, of the nerve irritation. For some time it was thought that the sacro-iliac joint might directly irritate the adjacent portion of the sciatic nerve by

movement, or by the proliferation of arthritis. This theory has had to die a natural death. Goldthwait's writings on congenital variations at the lumbo-sacral junction showed how backaches and sciaticas might occur, and the vogue of a sacralised fifth lumbar vertebra became popular especially in France. Unfortunately this too was overemphasized, and we realize now that an overgrown fifth lumbar transverse process is of minor importance. The search for the cause of sciatica went forward, and a couple of years ago Danforth and Wilson in the *Journal of Bone and Joint Surgery* pointed out in an anatomical and clinical study how vulnerable was the fifth lumbar nerve root, lying in a canal which it nearly filled, and which may be altered in its calibre by arthritis, by congenital malformation, and by movement.

Putti now, with his great authority, puts boldly forward this theory of pressure upon the nerve roots in the intervertebral foramina as the essential cause of sciatica, the pressure being due to arthritis in the posterior articulations of the lower lumbar spine. He does not concern himself in his address with the sciatic neuritides of diabetes, syphilis, alcohol or lead poisoning, which are rare and form part of a constitutional disease.

Putti points out that many neuralgias of the head and face take origin in some skeletal pressure, especially when they traverse bony canals. In the case of the intervertebral foramina, the one which transmits the fifth lumbar the nerve most prominent in sciatica is so small that the large nerve root almost completely fills it. This foramen is capable of being narrowed by the frequent congenital anomalies of this region, especially anomalies of the posterior articulation itself which forms its posterior boundary. Hence effusion or hypertrophic deposits may also cause a diminished calibre of the foramen. It is well known that arthritis with lumbar rigidity accompanies these sciaticas. Though lipping at the side of the bodies is commonly seen in the x-rays of advanced cases, the actual site of the nerve pressure, which is in the posterior articulations is not easily visible; but good x-rays, especially when lateral and stereoscopic, may bring the lesions into view. Putti says that when sciatic sufferers lean towards or away from the affected side (sciatic scoliosis) they are doing so by muscle spasm to ease the pain in the affected joints, just as a child with hip disease may hold its leg abducted or adducted. When a patient bends towards the affected side he is relaxing both the posterior vertebral joint and the nerve roots. When he bends away from the affected side he is opening up the intervertebral foramen and lessening the pressure on the nerve root. The treatment is to use heat and rest in bed and search for the cause of the arthritis. Later, when the patient is able to stand, a plaster jacket is to be applied. The jacket is not to attempt to correct the scoliosis, as this is of a protective nature; nor need it be kept on permanently, but only for short periods and at frequent intervals. Later on the jacket can be tolerated indefinitely, and is to be removed only for baking.

In cases which do not respond to conservative treatment one should be prepared to resect the posterior articulations and free the nerve roots from pressure. Putti has done this once with immediate relief.

J. A. NUTTER

A DANGEROUS MENACE

DR. T. B. MAGATH of the Mayo Clinic has done valuable service in drawing attention (*Minnesota Medicine*, 1927, x, 614) to the infestation of many species of fish and some mammals with *Diphyllobothrium latum*, or the broad tapeworm, which in a certain district of Minnesota is so prevalent as to be truthfully called a dangerous menace.

It has been known for some time that fish in various localities, such as the Yellowstone National Park and the Great Lakes, are attacked by parasites of various kinds, which render them inedible. Now we learn

with some dismay that there is an endemic centre of fish parasitism in and around Ely, Minnesota, and another—and this is of particular moment to us in Canada—in Winnipeg, Manitoba.

The fish of the Finnish lakes are infested with the larvæ of diphyllobothrium and the incidence of infestation of man in Finland is very high. The Finns are great fish eaters and prefer their victuals raw. Further, the district of Minnesota in question has had two influxes of Finns since 1888, and some of these people did not stop there, but continued on into Manitoba.

The fish commonly attacked are the pike, pickerel, perch and trout. Salmon and some other species of fish found in Finland are occasionally infested.

The life history of this parasite has been worked out by Janicki and Rosen, (1917). When the eggs are hatched, which takes from nine to fourteen days, a ciliated embryo, known as an onchosphere, makes its way out. It is remarkable, from a zoological point of view, that the worm requires two intermediate hosts for its further development. The first intermediate host is a particular species of cyclops. The larva bores its way through the intestine of the cyclops until it reaches the body cavity. In about two weeks it is ready to infect a suitable fish. Here, the larva finally reaches the muscles, and remains there in the form of a plerocercoid, a tiny white unencysted worm. When infected fish are eaten raw or imperfectly cooked they develop into a tapeworm, upwards of three feet in length, located in the ileum of the primary host, which is usually man, or a dog, or cat.

Dr. Magath brought out the alarming fact that in Long Lake, on which Ely is situated, all the pike and pickerel were infested, and that other lakes in the district were involved, in a degree directly proportional to their proximity to this city.

It seems to be proved that the life history of this dangerous parasite can be initiated and carried out entirely in North America. The disease is acquired through the custom of eating raw fish, and will become endemic where this is practised; particularly, if the sewage system in the locality is defective. Dr. Magath places the blame on the Finns. They are fishermen and eat raw fish. Many in Canada are very doubtful of the propriety of settling large bodies of foreigners from Northern Europe in our North West Their ways are not our ways, nor are their thoughts our thoughts. Not only are we faced with difficult social, educational, and political problems in this part of Canada, but it would appear that more is likely to follow, namely, a serious menace to the health of certain communities. Echinococcus disease is by no means rare in Manitoba; now we must look for diphyllobothriasis, with its attendant and dangerous anæmia.

A. G. NICHOLLS

THE VARYING MENTALITY OF THE HIGHER VERTEBRATES

IN an editorial in a recent issue of the *British Medical Journal*,* entitled "Psychic Back Numbers", the problem is discussed of why among the higher mammals the degree of intelligence varies so greatly. Heredity and an instinctive urge or impetus in each species must be regarded as powerful factors, but, having said this, little more in in the way of explanation has up to the present been advanced. Professor Fleure in an article in *Nature*, (vol. 118, p. 380, 1927) attributes the great superiority in the intellect of man over other mammals in great measure to the more prolonged period of his prenatal life: the lengthening in the period of gestation from the 220 days of the ape to the 280 days of the human. This extension, as suggested many years ago by Robert Chambers (*Nature*, vol. 120, Sept. 3, p. 322), has made possible a greater growth of brain before birth, and the after delay in the hardening of the skull permits an increase in the cerebral volume during infancy. Dr. Emile Deveaux (*Révue Scientifique*, 1927, No. 2, p 36) discusses the same question of the psychic backwardness of the higher

* *British Medical Journal*, Sept. 24, p. 556-7, 1927.

vertebrates as compared with man, and explains this inferiority by the fact that in all these animals either the muscles or digestive apparatus are voluminous. He considers that the determination of the blood supply to the enormous mass of muscles or to the predominant digestive organs leads to a comparatively poor supply to the brain. The cerebral cells cease to multiply as soon as their function is fixed. In illustration of his view, and to explain certain apparent contradictions, Dr. Deveaux sets himself to answer the following questions. Why is the tiger not more intelligent than the cat? Why is the dog more intelligent than the sheep? Why is the elephant inferior to man? The elephant enjoys an intra-uterine life of eighteen to twenty months, and does not reach adult life until twenty-two or twenty-four years of age. At first sight therefore he ought to be more intelligent than man. In some respects his brain attains a complexity which seems to surpass that of a dog and his memory is remarkable; nevertheless his cerebration is infantile, a condition which Dr. Deveaux explains on the following grounds. The elephant is exclusively a vegetarian feeder; his bony and muscular structure is gigantic, and he has a great hypertrophy on his face, which must greatly ration the supply of blood to the brain. The carnivorous dog is quite as intelligent as the elephant, and far more intelligent than the sheep, notwithstanding the mere sixty-three days of its gestation, and the comparatively short period of its puppyhood. Dr. Deveaux's conclusion is that different syndicates of cells in the organism are in continual conflict on the subject of the blood supply.

This conflict in the lower animals places the brain, the organ of thought, in a state of functional impotence as the result of defective nutrition, and perhaps explains the comparative poverty of intelligence in animals. Professor C. Lloyd Morgan, in a recent paper discusses the conditions present in evolution, and states that in resultant advance, conditions are such that there is homogeneous continuity, and that further research will in due time resolve problems which to-day present difficulties. Biological enquiry includes both natural selection and genetics. Natural selection deals with variants, and some variants are weeded out in the struggle for existence leaving others to survive, but such elimination is a resultant effect.

Dr. Deveaux in his paper also discusses the unequal strain imposed on the organism of animals by different diets, and attributes in part the stupidity of the sheep to the fact, that digestion in a carnivorous animal is finished in twenty-four hours while a herbivorous animal requires three or four days. The small intestine of the dog is only three times the length of the body, while that of the sheep is many times longer, and the blood supply of the different organs differs correspondingly in amount. A study by Dr. W. A. Thomas of Chicago on the Eskimos of Northern Labrador has some bearing on the above points. The Greenland Eskimo lives entirely on meat and has no available source of vegetable food. Dr. Thomas found no evidence of any special renal or vascular disease in this meat eating race. They appeared to be a healthy race, leading a life of great physical activity, and constantly exposed to great danger and hardships.

THE IMPORTANCE OF SUNSHINE

"OUR appreciation of sunshine is one of the most important advances of the century," was the recent remark of an eminent Canadian physician. For ages the importance of light and heat rays have been recognized, but it is only during the past five years that the short ultra-violet rays, which were formerly ignored by the physiologist and biochemist are now known to be essential for life. Without these rays animal life at least would cease to exist on this planet.

The ultra-violet rays, the very shortest in the solar spectrum, constitute considerably less than one per cent of the total solar radiation. They are readily cut off by the smoke, dust and moisture in the atmosphere, so in the winter months when the sun is low in the sky they are markedly reduced. Although this has been recognized in a

general way, it is only during the past year that any attempt has been made to actually measure this variation.

At the Hospital for Sick Children, the sub-department of Pædiatrics of the University of Toronto with the co-operation of the Department of Health of Ontario, has measured week by week the beneficial effect of these rays throughout the year*. The results obtained are impressive. The effect as measured by the antirachitic value of the sun's rays has been shown to be very slight throughout the autumn and winter months. About the first of March there occurs a sudden increase to a level approximately eight times as great as that of the fall and winter period. This high level continues until the end of October when there is a sudden drop to the lower level. This means that for over four months of the year, nature usually so lavish in her distribution of the essentials for life, distributes these rays only sparingly to Canada.

At the present time there are a number of special glasses on the market which transmit ultra-violet rays. The Toronto investigators studied three of these glasses; Corning special glass, Vitaglass and Vioray glass; the last of which is distributed from Oshawa, Ontario. It was found that the beneficial effect of the sun's rays through these glasses was from 25 to 50 per cent of the value of the direct rays. As the beneficial effect of autumn and winter sunshine is very slight the installation of special glass if only for fall and winter use is evidently of questionable value. However, during March, April and May at which time our inclement Spring weather prohibits the outside exposure of patients, the utilization of the sun's rays through special glass will be of undoubted value to all.

Recently, it has been demonstrated that sunshine markedly increases the resistance of rachitic rats against infection*. It is reasonable to assume that it will produce the same effect in man. Also from the Toronto laboratories, it has been shown that sunshine increases the acidity of the intestinal tract of rachitic rats. It is quite possible that this effect of sunshine may be an important factor in the treatment of certain diseases.

Although our knowledge of the value of sunshine has increased by leaps and bounds during the past few years it is evident we still have much to learn about its manifold effects on the human body.

* A. Brown and F. F. Tisdall, "The Seasonal Variation of the Antirachitic Effect of Sunshine."

An address delivered before the Interstate Post-Graduate Medical Association of North America, Kansas City, Mo., October, 1927.

* E. C. Robertson, *Canad. M. Ass. J.*, 1927, xvii, 1033.

ETIOLOGY OF RESPIRATORY DISEASE IN SCHOOL CHILDREN*

AN interesting and instructive study of the etiology of respiratory disease, occurring among children attending one of the larger schools in New York, was recently undertaken by Dr. Edith M. Lincoln, instigated, it would appear, by a health report which called attention to the importance of troubles of the upper respiratory tract as a cause of absence from school and great loss of school time. This study extended over three school years, and comprised a careful analysis of all factors which might conceivably influence the development of such illness.

A complete physical examination was made of every child on its enrolment. A note was made of its average daily diet as stated by the mother, and of its habits of life. Children with fresh colds were excluded from school until the state of acute infection, as evidenced by the presence of nasal discharge, had passed off; teachers and nurses combined to maintain as perfect hygienic conditions in the schoolroom and during the play hour as possible. In spite of these preventive measures, the amount of absence due to respiratory diseases was not markedly reduced. The age of the child and the season were to some extent factors, but the individual factor appeared to be the dominant one, as mani-

* E. M. Lincoln, *Am. J. Dis. Child.*, Sept., 1927, xxxiv, No. 3, 419.

fested in the personal resistance to infections of the upper respiratory tract. The state of the nose and throat appeared to be the most important condition that bore any relationship to the frequency of colds. Children with unhealthy tonsils were among the most frequent victims of upper respiratory infection. No correlation was found between the state of nutrition and the amount of respiratory disease. The home environment was carefully studied: the type of house; the kind of heating; the sleeping conditions; and the health of the parents and the general health habits of the children; but no important relationship could be established. Diet in general had little influence, with the striking exception that children on a diet containing a high content of carbohydrates, such as cereals twice a day, starchy vegetables and puddings, and bread and sweets freely, suffered from upper respiratory infections more frequently than those on a more balanced diet. This relationship was noted to be true for older as well as younger children who ate unduly large quantities of starchy food.

R. R. STRUTHERS

Editorial Comments

UNIVERSITY OF LONDON

We learn from the *Lancet** that the purchase of the Bloomsbury site from the Duke of Bedford by the University of London has been completed. Of the purchase money £400,000 has been received from the Rockefeller Foundation, whose splendid services to metropolitan education will never be forgotten, and £125,000 from a special government grant. This enables the university to enter upon a stage of development where it will be able to realize in a fuller manner the extensive promise of work implied by its name. Advance on its new foundation will be watched with much interest by medical men. The medical curriculum has been responsible for many vexatious dissensions in the history of the university, owing to the fact that medical education cannot be conducted without the intermediary of special schools and training which were not contemplated in the original plan of the university.

The university was founded originally as an examining body of an Imperial character, and its great lack in respect of teaching power in the metropolis began to make itself felt acutely some 45 years ago. The teachers of medicine in the metropolitan schools were in the forefront of the agitation for reform which then arose, owing to the difficult position in which the London medical student was placed in respect of obtaining medical graduation. Many propositions were made by the Royal College of Physicians of London and the Royal College of Surgeons of England, by King's College and by some of the schools connected with the large metropolitan hospitals, but all of them failed to receive effective support. In 1892 a Royal Commission was appointed which reported two years later, and its recommendations form the basis of the present organization of the university. A way out appears to have been found for a balancing of all claims while at the same time the university is brought into close relation with the teaching of medicine at the various medical schools in the metropolis. It is hoped that the outlook will prove in every way successful.

* *The Lancet*, Oct. 8, 1927.

We have pleasure in announcing that Dr. D. A. Stewart of Ninette, Manitoba, received a distinct honour at the hands of his alma mater, on October 7th last, when the degree of Doctor of Laws (Honoris Causa), was conferred upon him.

AN INTERNATIONAL HOSPITAL CONGRESS

On September 19th, on the invitation of the American Hospital Association representatives from eleven countries met at the League of Red Cross Societies in Paris to discuss the organization of an International Hospital Congress. Dr. Doane, medical director of the Philadelphia General Hospital, said that he and his confrères had come in a very humble mood to meet the representatives of institutions which had been at work for centuries. It was their hope that in some way their visit might pave the way for an international congress. The representatives of the various other countries present pledged the support of the institutions they represented, and it was unanimously agreed that an International Executive Committee be set up to prepare for an International Hospital Congress to be held in the United States in 1929, at which the prin-

cipal problems to be discussed should be as follows: first, the creation of national hospital associations, as well as of an international hospital association; second, the delimitation of the respective fields of public and private hospital work; third, the place of the hospital as a centre for the cure and prevention of disease, and for medical education, and research; fourth, the training of hospital executives, nurses, and auxiliary personnel, and fifth, the economic problems of hospital administration. It was also agreed that one session of the congress should be devoted to the discussion of some special problems, such as the care of the mentally ill, and the comparability of hospital statistics. Dr. Sand who had acted as chairman for the meeting congratulated all present on having taken a step which would not only serve the cause of the sick but also that of international good will.

Post-Graduate Study in Europe

We note from an editorial in the *Journal of the American Medical Association** that physicians returning from individual graduate study abroad are urgently advising Americans against joining personally conducted tours for graduate study in Europe. The chief objections appear to be that when numbers go in groups the work is crowded through in such a manner that individuals receive comparatively little benefit. Physicians seeking graduate medical education abroad, it is said, can secure better results as individuals and at more reasonable charges than when they go in groups. The Journal states that in some of the groups physicians have been charged $400.00 for services previously furnished to individual physicians as low as $125. Physicians intending to visit Europe can secure full information, and valuable advice by acting through agencies which have been established for the special purpose of assisting American physicians. The American University Union has headquarters in London and Paris and in Vienna there is the so-called American Medical Association. Through these organizations an American physician can make arrangements to the best advantage. His chances, of course, are better if he speaks the language.

* *J. Am. M. Ass.*, Oct. 8, 1927.

Dr. Charles F. Martin

We are pleased to note that the honorary degree of Doctor of Laws has been conferred by Queen's University upon Dr. Charles F. Martin, Dean of the Faculty of Medicine, of McGill University. Dr. Martin has been largely responsible for much of the remarkable progress which the Faculty of Medicine of McGill has made in recent years. In a special measure he is responsible for the extension of work in Public Health and Psychiatry. It is a pleasing courtesy of one university to recognize the good work of individuals in sister universities.

Dr. John Stewart

Elsewhere in this issue will be found an interesting account of the banquet recently tendered Dr. John Stewart of Halifax, on the occasion of the jubilee of his graduation. The *Journal* wishes to associate itself with the Halifax profession in their expression of appreciation.

During his recent visit to Scotland, where he took a prominent part in the Lister Memorial Celebrations, Dr. Stewart was elected to Honorary Fellowship in the Royal College of Surgeons of Edinburgh. Some few years ago, also, the University of Edinburgh conferred upon him the Honorary Degree of Doctor of Laws. These tokens of high consideration are gratifying to all.

Those who have the privilege of knowing Dr. Stewart personally are aware that to skill in his profession are added great qualities of head and heart which have endeared him to all with whom he has come in contact. For years he has been *persona gratissima* to the people of the Maritimes, and his fame is not confined to the provinces down by the sea. Our wish is that he may long be spared and so continue to be a source of high inspiration to his fellows.

Dr. M. M. Seymour

It is with much regret that we learn that Dr. M. M. Seymour, Deputy Minister of Public Health in Saskatchewan, is resigning from his duties in that province, and will shortly make his home in California. Canada is very loath to lose so many of her brilliant sons to her neighbours in the South, excepting when brighter skies and more genial climate may be necessary to health.

Dr. Seymour is a graduate of McGill University in Medicine, and of Toronto University in the Department of Public Health. Shortly after graduation he chose the western prairies for his new home. He first settled in Winnipeg, but at the outbreak of the Rebellion in 1885 he received the appointment of surgeon to the 95th Battalion and followed it through its various marches. When affairs became settled he commenced practice at Fort Qu'Appelle, where he remained until 1904. With the establishment of Regina as the provincial capital of Saskatchewan he removed to that city and was appointed commissioner of public health and later on Deputy Minister of Public Health for the prov-

ince. Three years ago he was appointed as the representative of Canada in the Health Section of the League of Nations, and spent eight months at Geneva. In 1925 Dr. Seymour was made president of the Conference of State and Provincial Health Authorities of North America, and it was in his presidential address at that meeting that he introduced his plan, generally known as the Seymour plan, for the control and final abolishment of the three infectious diseases, smallpox, diphtheria and typhoid fever, claiming that by means of vaccination and inoculation carefully carried out complete control and final extinction of these diseases could be obtained. Dr. Seymour has been the recipient of high honours. He was made a life member of the Canadian Public Health Association, a Fellow of the Royal Public Health Association of Great Britain, and Fellow of the American Public State Health Association. The University of Ottawa recently conferred upon him the honorary degree of LL.D. Dr. Seymour in an unusual degree possesses the confidence and esteem of all his confrères in the West, and of the profession generally throughout the Dominion.

Correspondence

Our London Letter

(From our own correspondent)

. *Mosquitoes in England.*—In a country where malaria is almost invariably imported it seems strange that mosquitoes should ever prove a nuisance, but from time to time residents in a district find the biting of these insects so intolerable, to say nothing of occasional cases of "blood-poisoning," that they complain. Recently the daily press made a fuss over the finding of a rare specimen in Finchley, a northern suburb of London, where the *aedes vexans* was discovered as a result of an anti-mosquito campaign in which the British Mosquito Control Institute was interested. This was probably the first intimation to many people of the existence of this Institute, which came into being a few years ago as a result of an outbreak of the mosquito nuisance in Hayling Island, on the south coast near Portsmouth. The campaign there was begun in 1920 and after a very beautiful demonstration of scientific research the breeding grounds were localized in certain salt-marshes: these were drained into the sea and the nuisance was completely eradicated. This sounds very simple, but it was a complicated piece of work and took several years. Mr. J. F. Marshall in 1924 erected suitable premises at his own expense for this purpose, and two years ago as a result of the efforts of Sir Richard Gregory a new building called the British Mosquito Control Institute was opened by Sir Ronald Ross. Considering the ravages wrought by malaria and the work he had done in bringing these under control in other parts of the world Sir Ronald must have been amused at the idea of an organization originally founded because of the annoyance of simple insect bites; in reality the scope of the Institute has been considerably widened to include experimental, educational and research work in connection with mosquitoes and other noxious insects and it is hoped to open branches in different parts of the country.

Veterinary Work in London.—A certain amount of attention has recently been attracted to the amazingly important work done in connection with the Royal Veterinary College, Camden Town, London, by the issuing of an appeal for £85,000 for very necessary additions to buildings and equipment. The College was founded in 1791 when, it may be said, veterinary science began to be studied for the first time in England, and it is a tribute to the position it has attained that it now deals with over 6,000 cases annually in the out-patient department as well as being an important centre for research in all branches of the subject. It is interesting to note that in France and Germany the veterinary colleges received in maintenance grants in a single year before the war more than the total amount granted by successive governments in this country for the last 100 years, and even the grants allowed by the Ministry of Agriculture are not for use in capital expenditure on buildings. The Treasury Development Fund has promised a sum of £35,000 towards the present appeal if an equal sum is provided elsewhere and the result of the call for help is eagerly awaited. Prof. Frederick T. Hobday, veterinary surgeon to the King, has recently been appointed principal of the College in succession to Sir John McFadyean, and his well-known work in this field is an assurance that extensions to the College mean extensions in its labours, for he is an ardent investigator and one of the chief promoters of the movement which brought into being the Section of Comparative Medicine at the Royal Society of Medicine. The appeal for the College at this moment is particularly interesting since at the annual congress of the National Veterinary Medical Association of Great Britain and Ireland, held during September, an important paper was read by Lt. Col. T. O. Young in relation to meat inspection, in which he pleaded that every public health department should appoint proper veterinary officials for specific duties in regard to food inspection. He urged that the system in practice in many countries of having adequate correlated inspection of

animals, *ante*, and *post mortem*, for slaughter in public and private abattoirs and of all the meat products and food factories should be adopted in England. At the moment meat inspection is only one of the many duties of a sanitary inspector, and the other aspects of the problem receive attention from various officials. Such a system as is proposed would probably mean the training of many more veterinary surgeons and the College work would be greatly increased.

The Welfare of the Blind.—The latest returns show that there are nearly 50,000 blind persons in England and Wales and although the success of preventive measures in such causative factors as ophthalmia neonatorum and congenital syphilis will show itself in time, such a large number of incapacitated individuals presents a serious problem both social and economic. The Ministry of Health through the Advisory Committee on the Welfare of the Blind has just issued a very excellent little handbook on this subject, which tells how best the blind may be helped and how they are helped. The Minister of Health has written a preface in which his sympathies are well demonstrated so that the public, always generous in appeals for sufferers from this grave trouble, may rest assured that the authorities are by no means shirking their responsibilities in the matter. An important part of the work is the training of school children and especially the elder children who though scholastically blind may not be economically blind. The Blind Persons Act and the Education Act contain certain valuable measures defining the action of local authorities and the working out of the principles laid down affords a fine example of that curious blend of state aid and voluntary effort which is such a source of admiration to foreign observers in this country.

ALAN MONCRIEFF.

London, October, 1927

Special Articles

ON THE HYGIENE OF MENSTRUATION IN ADOLESCENCE*

A special discussion took place in the Section of Obstetrics and Gynæcology at the last annual meeting of the British Medical Association in Edinburgh, on this important topic and was opened by a paper on "The Developmental Changes during Adolescence," by Dr. R. W. Johnston, Professor of Midwifery in the University of Edinburgh. He introduced his subject by stating that few matters in regard to feminine hygiene have a more profound and far reaching importance than this. The wise management of a girl's life at the period of adolescence gives the function of her reproductive organs a good start; and the converse is equally if not more true: the mismanagement of the girl's health at this time too often spells suffering, unhappiness, and disappointment. The reproductive organs during this phase of life call for a specially good supply of healthy blood and nerve energy, and if these are diverted to any extent either to the muscular system or to the intellectual centres the proper development of these organs is apt to suffer. Nevertheless, it must be remembered that the changes which occur during this period are perfectly natural phenomena, and as a sequence a natural mode of life is the ideal to be aimed at; one that is characterized by moderation in all things and that avoids extremes in any direction. Too strenuous a life; too much physical work, and too much brain strain; too frivolous an existence, and a life seriously irregular in any respect may do irreparable harm.

Much damage may, also, be done by so treating the girl that she grows up with the idea that she is a subject of special physical delicacy at these periods. This view must be regarded as a relic of the past. From time immemorial menstruation has been considered to be a function imbued with mystery. Even in the Mosaic law, the menstruating woman was regarded as being impure, as a person to be segregated and forbidden to take part in the ordinary social and religious life of the day. The mothers of the present younger generation are only slowly emerging from the influence of old traditions, which used to demand a day or two in bed with the comfort of a hot water bag, and the stimulus of a bottle of smelling salts as the only proper mode of life for a young woman at these periods. The time has come when we as a profession should endeavour to dispel any lingering relics of this morbid tradition. One of the lessons which the war taught us was the value of exercise. Many young woman have told me that before the war they used to suffer regularly and severely from dysmenorrhœa, but when employed in the hard work of nursing or driving ambulances in France their dysmenorrhœa entirely disappeared. A moderate amount of wholesome exercise promoting circulation through the pelvic organs and preventing constipation is certainly beneficial.

The second paper in the symposium was read

* *British Medical Journal*, Sept. 10, 1927, pp. 442-448.

by Dr. J. H. P. Paton, of the James MacKenzie Institute for Clinical Research, St. Andrews, on "The Influence of the General Health on Menstruation." He very strongly emphasized the fact, that a high level of general health is undoubtedly the important factor in securing normal menstruation, and stated that the health of the girls in St. Andrews School had been greatly improved since the introduction of regular games into the school curriculum. Dr. Paton, however, qualified his statement by saying that while it was undoubtedly true that active games may be continued by many during the menstrual period without harm and perhaps with benefit, his own experience led him to doubt the wisdom of encouraging too strenuous exercise at this time. In the St. Andrews School for Girls the rule has been that games, gymnastics, Swedish drill and dancing were stopped during the first three days of the period, but walking exercise was ordered in its place. In a series of 384 girls at this school, 78.3 per cent were free from any pain at this period; 12 per cent suffered occasionally from more or less pain, and slightly over 9 per cent suffered regularly—but in only a small fraction of these was the pain severe. This low incidence of dysmenorrhœa was attributed by Dr. Paton to the high standard of general health incident to the active games carried on in the school. While restriction of moderate activity was not necessary at this period, he considered it a wise act when the Medical Women's Federation discouraged the tendency of girls at schools to persist in playing in severe matches and hard games, when suffering from this disability, and when the house mistresses of almost all the large girls' schools agreed upon the rule that three days reprieve at this period was of value in providing relaxation and thus securing complete recovery of energy.

Intermittent amenorrhœa in school girls, Dr. Paton considered to be due in many instances to the long hours of continuous effort, mental and physical, imposed upon delicate adolescent girls by the modern school curriculum, and quoted the following statement of Munroe Kerr, "that the very athletic girl, and girls whose occupation involves great physical and mental strain, have in many instances a relatively poor menstrual discharge." Professor McIlroy of London also writes, "when girls at puberty are urged to work for severe examinations the first danger signal is often amenorrhœa or irregular and scanty menstruation."

The third paper in the symposium on "The Prevention of Menstrual Troubles," was read by Dr. Alice Sanderson Clow, who has had much experience as medical adviser for a large school of girls. She presented an interesting series of tables on the annual increase in height and weight of girls in attendance at the school, and the following facts were brought out by the charts she presented. The maximum increase in height occurred in girls during the second and third years preceding the onset of the catamenia, and was followed a year later by the maximum increase in weight. During the year in which the menses appeared there was a definite fall in this rate of increase in both height and weight. A definite increase in both respects continued for at least two years after the onset of the catamenia, but at a reduced rate after menstruation had begun. Although the majority of girls ceased to grow at sixteen and some had by that time begun to lose weight, nevertheless those in whom the onset of menstruation was delayed until 16 or 17, continued to grow until they were 18 or 19, whereas those who began to menstruate early ceased to grow correspondingly early.

Menstruation can be, and should be, according to Dr. Clow, free from suffering of any kind. This, in her experience, was the case in 94 per cent of girl students on leaving college, and this is the state of affairs which we should endeavour to obtain for every girl in the country. It was rare for any symptoms to occur during the first few months of a girl's menstrual life. Dr. Clow stated that when first she began work in the school, she found that 220 out of 1,000 in the school had developed some menstrual trouble. Most of the girls had been taught to modify their habits of life during the period. They were told that it was dangerous to have a bath, that they must give up their games and drilling at schools, and if possible spend part of the day lying down. In nearly every case she told them that in her opinion they might take their warm baths and join in the moderate games at hockey and tennis, and she laid special stress on the importance of taking this exercise on the first and second days of the period. The result of this instruction which has been given for the last thirteen years to almost every girl on arriving at the age of puberty, is that the proportion of those who suffer at this period has been reduced from 22 per cent to 10 per cent, and if free scope had been given, she believed it might be possible to practically abolish all menstrual suffering in healthy girls under 18 years. Girls engaged in sedentary or standing occupations are the greatest sufferers from dysmenorrhœa. This will continue until employers of women realize that this disability with its consequent loss of time and work can be stopped, by giving opportunity for daily exercise such as could be obtained by a short period devoted to drilling or dancing. Neurotic disturbances connected with menstruation are generally produced by unwise suggestion.

XUM

Their cure lies in inculcating sound views with regard to the function, and in healthy activity of mind and body during the period.

In the discussion which followed Professor Louise McIlroy agreed that every healthy girl should regard menstruation as a normal function. Cases of dysmenorrhœa were rare before the age of eighteen. In factory girls the incidence of dysmenorrhœa was low, and was confined as a rule to clerks and those whose occupation necessitated sitting all day. In these cases of occupational dysmenorrhœa dilating operations are of little value. The best remedy is exercise, dancing being one of the best forms. Professor Hendry of Glasgow maintained that it was of more importance to attend to the general health during the intervening days than during the actual period of the flow. He favoured vigorous exercise during the whole month such as tennis and Badminton, and not merely walking. He doubted whether modern dancing was vigorous enough as an exercise to effect much good. Dr. Alice Clow said it was rare for a girl to leave after a strenuous course at the training college with any menstrual trouble at all. She thought it lamentable that dysmenorrhœa occurred even in a small percentage of the scholars, and believed it could be checked altogether by exercise and suggestion. Dilating and curetting were quite unjustifiable.

ACUTE RHEUMATISM IN CHILHOOD

Report by British Ministry of Health*

One of the reports of the Ministry of Health issued recently, deals with rheumatism in children, the disease being chiefly studied in its relation to cardiac disability. Sir George Newman in a preface points out that in England and Wales during 1926 diseases of the heart caused 142 out of every 1,000 deaths, while cancer caused only 117 and tuberculosis 82, and of this high mortality 40 per cent at least is due to the disastrous effects of acute rheumatism. In the first section, Dr. Arthur Eastwood discusses the bacteriology of this disease, and states that most workers now agree that the cocci found in association with the disease do not form a species of their own, but must be included in the group of streptococci. Attempts to distinguish the rheumatic organism from other forms by serological reactions have till now not been successful, and the strains met with in acute rheumatism thus far do not appear amenable to grouping either into a single class or into a reasonably small number of types. Attempts have been made by experimental inoculation of animals to reach some conclusions, but the results have been very uncertain, and further work on blood cultures is of primary importance. Many experienced observers consider that the *streptococcus viridans* is the etiological agent, but in no instance can the proof be regarded as positive, and the theory of an ultramicroscopic virus cannot be absolutely excluded.

In the second section of the report, the incidence and prevention of diseases of the heart is considered. Cardiac mortality, it is claimed, is increasing despite an apparent lessening in the severity of the infection. The disease would appear to be less acute and virulent than it was forty or fifty years ago, but its minor manifestations appear more frequently than before. Urbanization and industrialism appear to be potent predisposing factors in the causation of cardiac disease. The incidence of new cases amongst those in close contact with a rheumatic patient was unduly high, suggesting that the infection is transmissible. It has been stated that rheumatism is less common among the very poor and destitute than among the children of the hospital class, but Sir George Newman doubts this observation and states that more recent investigation would suggest that the poorer the home, the greater the risk. The disease appears to be rare among the well to do.

Nature of the Disease

No satisfactory definition can yet be given.

"Probably (says the Report), it is correct to say that acute rheumatism is a general systematic infection, comparable in many ways to the infection of tubercle or of syphilis, 'A chronic slowly progressive disease characterized by intervals of calm simulating complete recovery, and periods of activity which entail further damage to the organism,' (T. T. Mackie); that this infection usually enters the system through infected tonsils, that up to the age of puberty the brunt of the infection usually falls upon and abides in the heart, and that just before and at puberty, especially in the female child, there is a special liability of the central nervous system to infection. After puberty the brunt of infection tends gradually to fall rather less upon the heart and rather more upon the synovial membrane of the joints, although the heart is still affected in more than half even of adult patients. . . The prodromal signs of the rheumatic infection in children are often pallor, loss of weight, slight daily rise of temperature, accompanied by an increased pulse-rate, and fatigue out of all proportion to the task or play. To distinguish what is called the pre-rheumatic child from the equally indefinite pre-tubercular child is difficult. Both require the most careful medical supervision, and the so-called pre-rheumatic child is too often in reality already the rheumatic child."

The early recognition of rheumatic infection is as difficult as it is important. The chief minor manifestations which are often the first to appear are growing pains, recurrent tonsillitis, and the appearance of subcutaneous nodules. Other premonitory manifestations include epistaxis, erythema multiforme persis-

* Reports on Public Health and Medical Subjects No. 44, 1927, H. M. Stationery Office, *The Lancet*, July 30, 1927.

tent headache, and nervous symptoms such as general fidgettiness, talking during sleep and nightmare. Growing pains may be mild or evanescent and are described as most noticeable in the hamstrings behind the knee. They constitute the distance danger signal of rheumatism. When they are present in a child with any indications of tonsillar disease it is generally wise to enucleate the tonsils. In about 10 per cent of cases a sharp attack of tonsillitis must be regarded as a prodromal symptom. With reference to tonsillectomy the report sums up as follows. "Tonsillectomy, if practised early enough and if *completely* performed, is of great value not only as prophylactic against a first attack of rheumatism but often as an effective preventive of any recurrence. It would also appear to have a beneficial effect in preventing an attack of rheumatism from resulting in permanent cardiac damage. The fact that tonsillectomy does not always prevent an attack of rheumatism is attributable partly, to the fact that the infection has reached the cervical or other focal glands before the operation took place. Even if this be so the removal of infected tonsils is almost certain to prove beneficial, and examples of any harm following the operation are exceedingly rare." In his preface, however, Sir George Newman remarks that the Report in its statements regarding the value of tonsillectomy may, perhaps, go further than the evidence warrants. The report concludes with a survey of necessary treatment from the public hospital standpoint, and the following principles are laid down: complete rest should be continued for at least three weeks after the pulse rate and temperature have returned to normal, the anæmia has disappeared and the heart sounds are unchanged. Under favourable conditions graduated rest may then be substituted. Country air, perfect environment, and constant medical and nursing supervision are required, together with special educational arrangements. Removal of any focus of sepsis is regarded as essential.

Detailed consideration is given in the report to the care of rheumatic children in special homes and special convalescent homes, day open-air schools, and schools for the physically defective. Important suggestions for prevention and treatment are also included.

THE TREATMENT OF SCALP MYCOSES WITH THALLIUM

It is not often that a new method of treatment meets with such unqualified success as seems to have attended the use of thallium acetate in ringworm of the scalp. The x-ray has undoubtedly been of great value in the treatment of this condition, but it has the obvious disadvantage of requiring an expensive apparatus and great technical skill, together with the dangers that attend errors in the technique. Its efficacy in destruction of the hair, however, is so well known that whatever is offered as a substitute must not only be as efficient, but must posses greater simplicity and safety of application.

There seems to be no doubt now that a substitute fulfilling these requirements has been found in the acetate of thallium, an element discovered spectroscopically by Crookes in 1861. The credit for clearly establishing its clinical value belongs to Professor Buschke.* It had been previously used by Sabouraud who had observed that the drug as used in France for its styptic and astringent qualities, caused a rapid fall of hair, but not a permanent baldness. He had not, however, sufficient experimental knowledge of its qualities to guide him in its dosage and administration, which are of crucial importance in the use of the drug. Buschke settled these points experimentally—he spent twenty years on the research—with a thoroughness which was conclusive, but it was not until after the War that he began to apply in practice what so far had been mainly of experimental interest. The desirability of a more simple method of treatment in these conditions was accentuated at that time by the shortage of x-ray equipment as well as the increasing numbers of scalp mycoses; one province of Russia reported 30,000 cases of this condition alone.

Buschke has now published reports of successful treatment in over a hundred cases, and others, on the basis of his work have reported equally encouraging results. Cicero and his colleagues in Mexico have treated 700 cases with thallium successfully and equally good results are recorded in England, Ireland, Italy and France.

The two points on which Buschke insists are: that the dosage must be absolutely exact (it is given on the basis of eight milligrams per kilogram of body weight); and, that since the drug has a cumulative action, a second dose must not be given before an interval of two or even three months. The only complications reported hitherto seem to have resulted from disregard of the second precaution. This caused vomiting, diarrhœa and weakness of the limbs, but these symptoms eventually disappeared entirely. Some temporary ill effects in a few other cases have been ascribed to deterioration of the drug.† The best preparation apparently is that made by Kahlbaum, and marketed as "Thallium Aceticum–Kahlbaum". It is usually

* *Dermatl. Woch.*, July 3, 1926; and *Urologic & Cutaneous Rev.*, August, 1926.

† *The Lancet*, Feb. 19, 1927, 389.

given by mouth, in sweetened water, in a single dose. The hair begins to loosen in six to eight days and complete epilation should be complete in three weeks or less. The younger the child the more rapid the action on the hair. Buschke held that even infants at the breast could be given it with impunity, and Freeman's series* includes cases ranging from 21 months to 15 years. The hair never fails to regrow.

As with the x-ray, thallium has no direct action on the fungus, and during epilation antiseptics should be applied to the scalp, with careful removal of all stumps. Albuminuria is a contra-indication to its use, and in the dosage required for adults the drug is highly toxic and should never be used after early adolescence. The comparative rarity of ringworm of the scalp after puberty, however, makes this feature no great disadvantage.

H. E. MacDermot

* *Irish Jour. of Med. Sci.*, July, 1927.

LIVER IN THE TREATMENT OF ANÆMIA

Attention was called recently in our pages to the apparent benefit obtained from the administration of liver in the treatment of pernicious anæmia. Hitherto this disease has been an outstanding example of a disease in which every new method of treatment has raised hopes which have flourished for a short period and then withered away. It is therefore very gratifying to note that the optimistic claims first made by Minot and Murphy continue to be confirmed by numerous other investigators. The history of this discovery is of interest. For many years Whipple and his co-workers experimented on the treatment of anæmias in dogs; they showed that treatment with iron salts produced little or no benefit, but later on found that diets of meat and liver produced rapid regeneration of the blood corpuscles and of the hæmoglobin.* This led Minot and Murphy† to try the effect of a diet on blood regeneration in pernicious anæmia containing an abundance of blood and meat and were pleased to note the very remarkable improvement which took place in forty-five patients. A still more recent report on the results of treatment in 105 additional cases appears most satisfactory. The diet recommended in this last report includes besides 200 grammes of cooked liver, plenty of fruit and 70 grammes of red meat. Out of 105 patients, 99 reached a level of 4,000,000 blood corpuscles per cubic millimeter, and in all cases the general symptomatic improvement was very marked. As far as can be now stated the improvement appears to be able to be permanently maintained. Koessler, Maurer and Loughlin* have made similar observations, and agree that this remarkable improvement cannot be attributed to vitamine A alone; and consider that there is a factor in the liver which has a specific action on blood regeneration. Without doubt a very important therapeutic advance has been made. Investigations which have been actively carried on since appear to indicate that this active substance of the liver is free from lecithin and from ordinary lipoids. It is not a protein and it does not appear to contain iron. It appears to be either a polypeptid or a nitrogenous base. There is also evidence that the richer it is in nitrogen the more powerful is its effect; the results obtained cannot be attributed to any known vitamins. The isolation, however, of a fractional substance that can only be identified by its curative action on a relatively infrequent disease presents a biochemical problem of exceptional difficulty.

* Whipple, Robscheit, Robbins, and Hooper, *Am. J. Physiol.*, 1920, liii, 36.

† *J. Am. M. Ass.*, 1926, lxxxvii, 470.

While physicians have increasing evidence of the value of liver in the treatment of anæmia, they meet with increasing difficulty in persuading their patients to persevere in its daily use. This is partly due to the fact that few people cook liver in any other way than by frying. The following recipes are copied from the *Journal of the American Medical Association:*

French Ways of Cooking Liver

1 pound of liver
1 slice of bread *grated*—this means grated, not crumbled
1 tablespoonful of chopped parsley
½ teaspoonful of salt
¼ teaspoonful of pepper
A very thin slice of ham

Wash the liver well and cut into thin slices; put into casserole; sprinkle the bread crumbs over it, then the parsley, pepper and salt. Cut the ham into strips and lay it on top, then pour in one teacupful of cold water. Bake in oven for half an hour.

Another French recipe is as follows:

1 pound of calf's liver
3 tablespoonfuls of grated bread crumbs
4 large mushrooms, chopped
1 medium-sized onion finely chopped
2 springs of parsley finely chopped
½ teaspoonful of salt and a pinch of pepper.

Cut the liver into slices half an inch thick, and sprinkle each slice with the mixture of bread crumbs, mushrooms and seasonings; put in a casserole, pour over it one-half pint of cold water or good soup stock, and bake in a slow oven for three quarters of an hour.

Liver Molds

This is an English recipe:

Take 1 pound of liver, boil it and grate it with three strips of bacon. Mix it with one-fourth of the amount of bread crumbs, the yolks of two eggs and seasoning to taste. Steam in buttered molds.

* *J. Am. M. Ass.*, 1926, lxxxvii, 476.

Association Notes

EXTRA-MURAL POST GRADUATE MEDICAL EDUCATION

On September 30th last, the Association completed its second year of extra-mural post graduate activities, which work has been carried on so successfully and acceptably, thanks to the splendid generosity of the Sun Life Assurance Company.

Members of the Association will learn with much pleasure and gratitude that our benefactors, the Sun Life, have seen fit to make us a third grant of $30,000 to continue the work for another year.

During the past two years more than 400 speakers have, by way of addresses, clinics and demonstrations, talked to an aggregate attendance of 35,000 practitioners in every province of the Dominion and in Newfoundland.

Judging by the reports received from the medical societies visited and also from the speakers, the services rendered have been appreciated most highly. Many practitioners have driven hundreds of miles to attend meetings. Difficult cases by the score have been seen by the visiting clinicians. Altogether, the plan has worked out in every province as successfully as it was hoped for; in fact our hopes have been greatly exceeded. The Canadian Medical Association is very proud of the achievement.

We are, further, sincerely appreciative of the magnificent spirit of the officers of the Sun Life Assurance Company which actuated them to supply us so generously with the necessary funds for past efforts and future plans.

OSLER MEMORIAL FUND

Subscriptions and pledges received to date to the Osler Memorial Fund of the Canadian Medical Association are as follows:

Alberta	$ 95.00
New Brunswick	10.00
Nova Scotia	60.00
Ontario	450.00
Quebec	770.00
Saskatchewan	165.00
	$1,550.00

BEWARE

of foreign collection agencies and Insurance Companies not licensed to do business in Canada. Do not do business with either unless you are perfectly certain that their methods are satisfactory and that you are fully protected in dealing with them. This warning is issued because of numerous complaints which have been brought to our attention.

T. C. ROUTLEY,
General Secretary.

Provincial and Local Association Notes

MEDICAL SOCIETY OF NOVA SCOTIA, HALIFAX BRANCH

A special meeting of the Halifax Branch was held at the Dalhousie University Clinic on September 23rd. In welcoming the speakers of the evening, Dr. Murphy, the President, explained that owing to the fact that a refresher course for physicians had just been completed, it had been decided not to ask the visitors to give clinics. Drs. McKim and Cushing had come from Montreal to visit the several branches of the Medical Society of Nova Scotia, under the extra-mural lecture scheme of the Canadian Medical Association, and were cordially welcomed to Halifax.

Dr. McKim was first called upon for his paper on "Infections of the hand." In this, he referred to the danger of regarding any wound of the hand as trivial, and urged the greatest care in all cases in which there is evidence of infection. He pointed out the desirability of a clear view of the field to be investigated, and said that this could only be obtained by controlling bleeding and making a sufficiently large incision. He advocated general anæsthesia, and the use of alcohol in the preparation. The wound should be dehydrated with alcohol and packed with gauze soaked in sterile melted paraffin, and the dressings applied in a way which would maintain the hand in the position of function.

Dr. Cushing followed with a presentation of the subject of "Tuberculosis in Children." He referred to the almost inevitable infection of the infant of the tuberculous mother unless great care is exercised, and to the great fatality of pulmonary tuberculosis in infancy. The difficulty of early diagnosis was discussed, and the route by which infection passes to the lung and the selection of the lower lobe of the lung were explained. The importance of x-ray disclosure of involvement of the mediastinal glands was emphasized. Dr. Cushing also referred to the possible value of the B.C.G. vaccine in protecting infants of tuberculous parents, stating that it does no harm but an actual protective value is not conceded by all investigators.

Both papers were greatly enjoyed, and were discussed by a number of those present. The thanks of the branch were tendered to the speakers by the President. CLEMENT MACLEOD

MEDICAL SOCIETY OF NOVA SCOTIA, EASTERN COUNTIES BRANCH

The sixth annual meeting of the Eastern Counties Branch was held at St. Martha's Hospital, Antigonish, on September 21st, with a fine representation of the membership in attendance. It was decided to favour the suggestion that the next annual meeting of the Medical Society of Nova Scotia be held at Charlottetown, jointly with the Canadian Medical Association. A resolution was passed commending the extra-mural lecture scheme of the Canadian Medical Association, and praying for its continuance. In response to a request made by the Nova Scotia Tuberculosis Commission that the branch consider the acceptance of reduced fees from the Commission for the treatment of indigent persons suffering from tuberculosis, it was decided that no fees should be accepted in such cases, but that the equivalent of such fees should be used in providing comforts for the patients. The secretary was instructed to convey the sympathy of the branch to Dr. George E. Buckley, who recently met with a painful and disabling accident.

At the afternoon session, addresses were given by Drs. L. H. McKim and H. B. Cushing, of Montreal, and Dr. S. L. Walker of Halifax. Dr. McKim discussed "Infections of the hand," emphasizing the importance of the use of a general anæsthetic, and of using a tourniquet so that blood will not obscure the view of the field of operation. The incision should be ample, to allow of thorough search for pus pockets and necrotic tissue. After operation, the hand should be bandaged in the position of function. Dr. McKim's paper was discussed by Drs. P. A. McGarry, J. J. Cameron, M. E. McGarry, J. S. Brean, H. C. S. Elliot, J. L. McIsaac and W. F. McKinnon.

Dr. Cushing took up the "Prevention and treatment of diphtheria and scarlet fever." In prevention, the value of general immunization was emphasized. While antitoxin and the toxin-antitoxin mixture in the case of scarlet fever are not yet as well worked out as in the case of diphtheria, their value is considerable. Reference was made to the means of averting anaphylactic reactions. Drs. Cameron, Brean, and MacKinnon discussed this paper.

Dr. Walker brought up the matter of professional attitude towards medical societies and medical problems of public interest.

The President of the Branch, Dr. J. J. MacRitchie, entertained the members at dinner, when the visitors were toasted by Drs. P. R. Stone and P. S. Campbell. After dinner, Dr. McKim spoke on "Fractures and crushing injuries to the extremities." He advised morphine, rather than stimulants or transfusions, in the case of shock. If possible, operate before shock appears; otherwise apply tem-

porary dressings and wait. Do not operate if systolic pressure is below 80. As an anæsthetic, prefer gas-oxygen or ethylene. Be conservative in respect of amputations. Regard a compound fracture as being more urgent than an acute appendix.

Dr. Cushing's second paper dealt with "Erysipelas." He discussed its causation, diagnosis and treatment, and referred to its tendency to recur. In treatment, rest in bed and care of the bowels are the principal measures. Drug treatment, either internal or external, is of little avail, and the same applies to transfusions and convalescent serums. A really satisfactory serum is not yet available, but promising work in this respect is now under way.

Drs. McKim and Cushing were heartily thanked for their excellent papers, and thanks were also extended to the hospital sisters and to Dr. MacRitchie for their hospitality.

New officers were elected as follows: Honorary President, Dr. G. E. Buckley, Guysboro; President, Dr. M. E. McGarry, Margaree; Vice-Presidents, Drs. D. R. Stone, Sherbrooke and J. S. Brean, Mulgrave; Secretary, Dr. P. A. Campbell, Port Hood. P. A. Campbell

WESTERN NOVA SCOTIA MEDICAL ASSOCIATION

The autumn meeting of this branch of the Medical Society of Nova Scotia was held at Yarmouth, September 27th, with the President, Dr. G. W. T. Farish, in the chair. There was a large attendance of members. It was decided to recommend that the next meeting of the provincial society be held jointly with that of the Canadian Medical Association, at Charlottetown, instead of at Annapolis Royal as originally intended. The Secretary was directed to write Dr. S. H. Thibault, a member of the branch, expressing the sympathy of his colleagues in his illness.

The first paper of the afternoon session, on "Compound Fractures and Crushing Injuries of the Extremities," was given by Dr. L. H. McKim, of Montreal. This dealt, in a very interesting way, more particularly with the methods of investigation and treatment which are followed at the Montreal General Hospital. After the discussion of this paper by Dr. C. A. Webster, Dr. H. B. Cushing, of Montreal, spoke on the "Prevention and Treatment of Scarlet Fever and Diphtheria, basing his remarks on the experience of the Alexandra Hospital. Dr. Cushing urged the importance of the early use of antitoxin in scarlet fever in order to secure the best results. His paper was discussed by Drs. G. W. T. Farish and T. A. Lebbetter.

Following a dinner by the physicians of Yarmouth, Dr. McKim addressed the association on "Infections of the Hand," again drawing upon the Montreal General Hospital experience for illustration. He emphasized the advantage of the bloodless incision, recommended the use of alcohol and mercurochrome, and advised against too early change of dressing. Drs. Farish, L. M. Morton, and C. K. Fuller discussed Dr. McKim's paper. Dr. Cushing followed with a paper on "Rheumatism as Seen in Children," in which recent work was outlined, the difficulties in the way of satisfactory treatment pointed out, infection via the tonsils discussed, and the danger of heart involvement emphasized. Dr. Lebbetter discussed the paper.

Dr. Smith L. Walker then spoke on the activities of the Canadian Medical Association and the advantages of membership therein, and also urged the importance of cordial support of local societies by the profession.

The several speakers were tendered the hearty appreciation of the Association.

T. A. Lebbetter

PROVINCE OF QUEBEC MEDICAL ASSOCIATION

Report of the Annual Meeting

September 27, 1927.

This year's annual meeting took the form of a Clinical Day and consisted of three sessions. Three hundred and twenty-five members registered.

The forenoon session was held at the Hôpital du Sacré-Coeur for Incurables—and was conducted in the French language. With one exception, the programme consisted of the presentation of clinics and addresses on different phases of tuberculosis as follows:

Président: Dr. J. Stevenson

Les différentes formes de tuberculose pulmonaire traités à l'Hôpital du Sacré-Coeur.
Yvon Laurier.

Présentation de faux tuberculeux.
C. O. Milot.

Une histoire de cas.
E. Vigeant.

Présentation de malades traités par le pneumothorax artificial.
G. E. Mignault.

Phrénicectomie; thoracoplastie extra-pleurale. Indications et présentation de malades.
J. A. Vidal.

Technique opératoire de la phrénicectomie et da la thoracoplastie. Démonstration par le E. Dubé.

Présentation de pièces anatomo-pathologiques.
L. J. Jutras.

Un cas de sarcome infectieux humain.
Prof. Pierre Masson.

12.15 Visit to the Institution.

1.00 p.m. Luncheon at the Institution.

The round of inspection of this recently constructed institution was most instructive, and the luncheon served by the Reverend Sisters most enjoyable.

The afternoon session was held at the Montreal General Hospital, and consisted of a series of short clinical demonstrations presented by members of the teaching staff of the Medical Faculty of McGill University.

2.30 p.m.—Clinic at the Montreal General Hospital by the teaching staff of McGill University.
Chairman: Dr. Guy Hamel

Typhoid fever.
C. P. Howard (M.G.H.)
Idiopathic Dilatation of the œsophagus. Late result in a living case. Illustrated.
F. A. C. Scrimger (R.V.H.)
A case of leptothrix.
F. Burgess (M.G.H.)
Demonstration of orthopædic cases.
J. A. Nutter (M.G.H.)
Reconstruction of the tear duct.
G. Mathewson (M.G.H.)
A case of congenital polycystic kidney with pyelographic findings.
F. S. Patch (M.G.H.)
The value of lipiodol in the localization of pressure on the spinal cord.
C. K. Russel (R.V.H.)
A case (post-operative) of tumour of the spinal cord.
G. Johnson (M.G.H.)
Cord lesions due to birth injuries.
L. Lindsay (C.M.H.)
A case of acromegaly.
G. Browne (M.G.H.)
Extra-articular ankylosis of the jaw.
W. L. Barlow (M.G.H.)
Myositis ossificans.
A. Goldbloom (C.M.H.)
A case of calcification of the pleura.
W. L. Ritchie (M.G.H.)
The diagnosis of subdiaphragmatic abscess.
A. H. Gordon (M.G.H.)
Sarcoma of the heart; living case.
G. R. Brow (R.V.H.)
A giant-celled tumour of the tibia, with bone graft.
F. J. Tees (M.G.H.)
The results of thoracoplasty in pulmonary tuberculosis.
E. W. Archibald (R.V.H.)
A case of Hodgkin's disease.
R. R. Struthers (M.G.H.)
Treatment of diabetic grangrene.
E. H. Mason (R.V.H.)
A simple process for the detection of acetonæmia.
I. M. Rabinowitch (M.G.H.)
Large extra-peritoneal abdominal cyst in a female.
D. Patrick (M.G.H.)
Post-operative results of splenectomy.
A. T. Bazin and E. S. Mills (M.G.H.)
Case of carcinoma of the splenic flexure.
F. B. Gurd (M.G.H.) and two other subjects, one by H. M. Little (M.G.H.) and one by E. M. Eberts (M.G.H.).

5.00 p.m.—Tea given by the Governors of the Hospital.

At the conclusion of the tea, which was served in the New Nurses' Training School, opportunity was granted for an inspection of this building.

At 6.45 p.m. an informal subscription dinner was held at the Mount Royal Hotel, immediately followed by the annual reports of the Secretaries and the Treasurer.

These reports were most encouraging. Briefly reviewing the beginnings of the Association in 1922, and its few meetings thereafter until last fall, the Secretary brought before the members a summary of the activities of the Association for the current year, *i.e.*, official representation at the Conference on Medical Services in Ottawa, and at the annual meeting of the Canadian Medical Association in Toronto; the taking over of the Post-Graduate Committee of the Province of Quebec, which has produced most satisfactory results; and finally, the Clinical Day of September 27th, being the crowning of what might be termed an excellent revival of a dead and long wanted necessity, a meeting ground for the furtherance of unity and harmony among the members of the profession of the province.

Elections followed these reports and brief speeches by the President, Dr. Z. Rheaume, and Dr. J. C. Meakins, who spoke in the name of his English-speaking colleagues.

The elections resulted as follows:
President.—J. Stevenson, Quebec.
Vice-Presidents.—J. A. Viger, St. Hyacinthe; C. C. Birchard, Montreal; B. Bourgeois, Montreal.
Secretary.—L. Gérin-Lajoie, Montreal.
Treasurer.—E. Trottier, Montreal.
Executive Committee.—H. C. Cabana, Sherbrooke; E. C. Cross, Three Rivers; J. R. Pepin, Montreal; C. Dagneau, Quebec; Gordon Hume, Sherbrooke; A. H. Robert, Montreal; Guy Hamel, Montreal; O. Faubert, Rigaud; J. R. Belisle, Hull; J. E. Piette, Joliette; A. T. Bazin, Montreal.

Finally the Professional Interests meeting was held, at which most interesting questions were discussed. Three especially brought expressions of opinion which were well worth hearing, namely:

The Workmen's Compensation Act; chiropractors and many other things; the medical profession and the dispensaries.

Although no definite resolutions were adopted, views were exchanged and the Executive Committee will take into serious consideration the formation of a sub-committee to study these particular questions. The following is the complete programme for the evening:

Professional Interests Sessions—Soirée des Intérêts Professionnels
Président: J. E. Bélanger, Prés. of the C.P.S.P.Q.
Les Sociétés Médicales Autonomes.
J. A. Boisvert.
La Loi des Accidents du Travail.
H. Dorval.
Chiropractors and many other things.
L. Pariseau.
Proposition d'un Tarif Médical Détaillé.
J. R. Gagnon.
Proposition de Loi plus sévère pour les Sages-Femmes.
J. R. Gagnon.
La Profession Médicale et les Dispensaires.
A. Desloges.
11.00 p.m.—Refreshments.

LÉON GÉRIN-LAJOIE,
Secretary to the P.Q.M.A.

SASKATCHEWAN MEDICAL ASSOCIATION ANNUAL MEETING

The twentieth annual meeting of the Saskatchewan Medical Association was held in Temple Gardens, Moose Jaw, September 20th and 21st. Registration opened at 9 a.m. and at 10.30, the meeting was called to order by the President, Dr. R. R. Stirrett. There were approximately 100 in attendance. Addresses or papers were delivered as follows:—

Dr. Alan Brown, "Feeding problems, including the hypertonic infant, the ruminator, the infant with small capacity for food, the neuropathic child." "Eczema and asthma." Dr. A. T. Bazin, "Acute abdominal lesions in infancy and childhood." "Diagnosis and management of early cancer in the breast." Dr. J. K. McGregor, "End results, immediate and remote." "Surgical lesions of the stomach." Dr. C. P. Howard, "Subacute and chronic arthritis." "Classification, symptoms, and treatment of nephritis." Dr. H. C. Boughton, "Some uses of lipiodol in chest diagnosis. The above papers were exceptionally interesting and were greatly appreciated by those present. Luncheon was served to the members of the Association at the Moose Jaw Club, and on the evening of the first day, at the same club, a banquet was given by the Moose Jaw District Medical Society.

Those in attendance at the annual meeting, were delighted with the exceptional hospitality extended to them by the medical men of the city. After the banquet the annual business meeting was held, and reports were received for the past year from the Executive, and General Secretary Treasurer. The following officers were elected for the coming year:—

Hon. President, Dr. R. R. Stirrett, Swift Current; *President*, Dr. V. E. Black, Moose Jaw; *1st Vice-Pres.*, Dr. R. L. King, Prince Albert; *2nd Vice-Pres.*, Dr. F. H. Hurlburt, North Battleford; *Gen. Sec.-Treas.*, Dr. A. MacG. Young, Saskatoon.

Dr. J. B. Ritchie was chosen as Representative of the Saskatchewan Medical Association on the Anti-Tuberculosis League Board.

A very pleasing event took place when Dr. M. M. Seymour, Deputy Minister of Public Health, was made an Honorary Life Member of the Saskatchewan Medical Association. Dr. Seymour, a graduate of McGill, 1879, is virtually the father of the Association; for with a few associates he was responsible for its organization. Many laudatory remarks were extended to him for his work not only as an ethical medical practitioner but also in his public capacity as a public health officer. Dr. Seymour in very feeling terms expressed his great appreciation for the honour conferred on him. He then gave a short résumé of his work since graduation, but spoke more particularly of his connection with public health work in this province for the past twenty years. He stated that in the very near future he was severing his connection with the Department of Public Health, and would be permanently residing in California. He closed his remarks by extending a hearty invitation to any doctor from Saskatchewan to visit him in his new home.

Dr. Seymour was married recently at Port Hope, Ont., to Miss A. H. Fallon, niece of Bishop Fallon.

Dr. T. C. Routley, General Secretary, Canadian Medical Association, was present at the meeting and gave an inspiring address on the work of the Canadian Medical Association and what had been done in the past few years since the medical men of Canada had become organized. At the conclusion of the meeting, a very hearty vote of thanks was proposed to the visiting speakers for their excellent and inspiring addresses. The proposal was carried with great enthusiasm.

Men and Books

WILLIAM HUNTER'S ANATOMY OF THE HUMAN GRAVID UTERUS

By Ross Mitchell, M.D.

Winnipeg

The kindness of Dr. H. A. Wright in placing his copy at the writer's disposal has made possible this description of William Hunter's masterpiece, a work which bears the same relation to obstetrics that the *De Corporis Humani Fabrica* of Vesalius does to anatomy.

It is truly a magnificent volume. This is the *editio princeps* of 1774, an elephant folio, 28 x 23 inches, bound in half calf with marbled boards. The title page bears the signature of the first owner, Dr. John Harley, Queen's Lying-in Hospital, London, 1797, and of the second owner, his son, Benjamin V. Harley, also a physician. It was given by a grandson of the original owner to Dr. H. A. Wright, then residing at Oak Lake, Manitoba, but now at Winnipeg, who in turn has bequeathed it to his son, Dr. D. A. D. Wright of Codette, Saskatchewan.

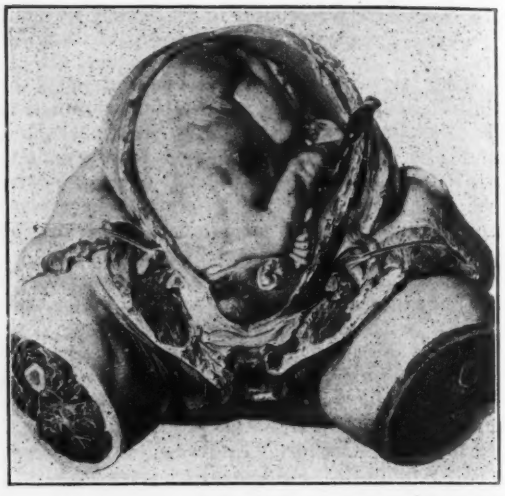
Mr. Gordon G. Harley who presented the book to Dr. Wright has very courteously supplied further information about his father and

grandfather. Dr. John Harley, a Dublin graduate, came to Halifax, N.S., as surgeon on *H. M. S. Eurydice,* was induced to remain by the Governor of Nova Scotia, a friend and classmate, and later on settled and practised in Lunenburg County. His residence was later owned and occupied by Senator Kaulbach. The son, Benjamin Valentine Harley, graduated from Harvard and began practice in Yarmouth. At the time of his coming there was an epidemic of what had been called chickenpox, but which Dr. Harley diagnosed as smallpox. The inhabitants were ready to mob him, but when two of the sufferers died they accepted his diagnosis as correct, and thereafter he had no lack of patients. He married a daughter of Reuben Clements who represented Yarmouth County in the Legislature for twenty years and was a supporter of Joseph Howe. Concerning the plates of William Hunter Mr. Gordon Harley writes: "I know my father treasured them very much indeed and regarded them as his most precious professional possession. It was his boast that he had never lost a woman in childbirth in nearly half a century of practice." He died in 1886. Mr. Gordon Harley moved to Manitoba in the early eighties and has since farmed continuously.

The first edition of this magnificent work was issued from the celebrated press of John Baskerville of Birmingham only a year before his death. Baskerville began life as a writing-master, made a fortune in the business of japanning, and in 1750, at the age of forty-four, turned his attention to type-founding. Next, he set up a printing house and published editions of Virgil, Horace, Terence, Juvenal, Catullus, Milton, and Addison, which were admirable specimens of typography. Baskerville is deservedly ranked among the foremost of those who have advanced the art of printing. He did not print many works, as the sale did not meet his expectations; after 1765, indeed, he put forth very little. Specimens from the Baskerville press are not easily had and are of considerable value. In the preface of this work the author states: "The additional expense of Mr. Baskerville's art was not incurred for the sake of elegance alone, but principally for the advantage of his paper and ink which render a leaf of his Press-Work an excellent preservative of the plates between which it is placed." Time has shown that the praise is highly deserved, for after more than a century and a half the paper is still firm and the printing as clear as when it first came off the press.

"If it be allowed," writes William Hunter in the last paragraph of the preface, "that the author has spared neither labour, nor time, nor expense in improving an important part of anatomy this is all the merit which he can claim." The labour is represented concretely in four hundred anatomical preparations in the Hunterian Museum at Glasgow, which Professor Teacher estimates were the basis of this work, and which were prepared not only by William Hunter during years when he was one of the busiest professional men in London, but by his assistants in the Great Windmill Street anatomy school; notably by his younger, but more famous brother, John, "whose accuracy in anatomical researches," quoting again from the preface, "is so well known, that to omit this opportunity of thanking him for that assistance, would be in some measure to disregard the future reputation of the work itself." The time amounted to twenty-four years, if not indeed to thirty, since William Hunter's early friend and adviser, Dr. Douglas, had meditated such a work, and it is only reasonable to suppose that Hunter, in whose house he lived, assisted Douglas in his researches. The expense must have been enormous for not only was the press work executed, as already mentioned, by the foremost printer of that age, but the drawings were made by J. van Rymsdyk, a Dutch artist with a very considerable reputation, and the plates were engraved by the leading artists in this line, headed by Mr., afterward Sir Robert, Strange. None but a wealthy man endowed with good taste could have produced such a volume.

The text is printed in Latin and English in parallel columns to avoid the necessity of trans-



TAB. VI.—Foetus in utero, prout a natura positus rescissis omnino parte uteri anteriori ac Placenta, ei adhaerente.

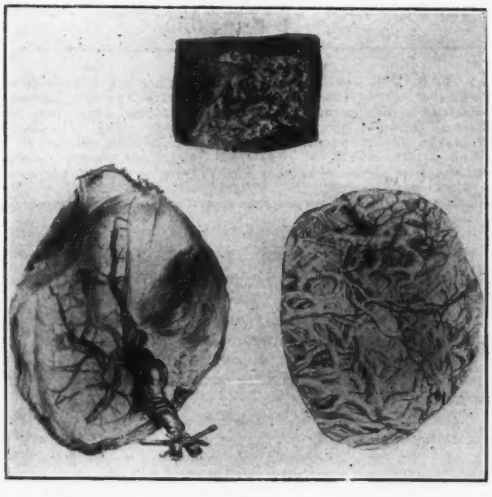
FIG. 1.—*Plate VI.*—This plate, engraved by Sir Robert Strange, represents the child in the womb in its natural situation. Every part is represented just as it was found; not so much as one joint of a finger having been moved to show any part more distinctly, or to give a more picturesque effect.

TAB. IX.—Trunco a vertice per mediam spinam diviso, haec figura repraesentat pelvim, ejusque contenta, situ suo naturali, cum aliqua et femoris dextri et lumborum parte. Quod hic deficit circa pubem ad delineandas tabulas, mancam et mutilam, abunde supplebit Tabula XXII da.

FIG. 2.—*Plate IX.*—A full side view of the pelvis with its contents, and adjacent parts, cut down through the middle, to show the turns of the bones, and the situation of the internal parts.

lation. In 1815 a second edition was printed by Messrs. Cox of the Borough, London, who had bought the copyright from Matthew Baillie. In 1851, a third edition was issued by the Sydenham Society, in folio, the pages being doubled. The whole work was also copied full size in Caldani's *Icones Anatomicæ*, Vol. III, Venice, 1810.

In the preface William Hunter sets forth the genesis of the work: "With respect to the present undertaking, in the year 1751, the author met with the first favourable opportunity of examining, in the human species, what before he had been studying in brutes. A woman died suddenly, when very near the end of her pregnancy; the body was procured before any sensible putrefaction had begun; the season of the year was favourable to dissection; the injection of the blood vessels proved successful; a very able painter was found; every part was examined in the most public manner, and the truth was thereby well authenticated.



TAB. X.—Fig I.—Uteri pars anterior et extima, prout se proebuit omnino siccata, exhibens faciem vasorum uterinorum, qualem prae se ferunt eo loci, ubi Placenta utero adhaerat. Fig. II.—Facies interna Placentae, cujus vasa per funiculum umbilicem cera sunt repleta. Fig. III.—Ab alia muliere biduo post partum extincta, exhibet partem superfeciei intimae uteri.

FIG. 1.—*Plate X.*—1. A view of the outside of the forepart of the womb, as it appeared when quite dry; exhibiting a specimen of the uterine vessels, at the part where the placenta adhered.

2. The inside of the placenta which was injected by the umbilical vessels after it was taken out of the womb.

3. A portion of the internal surface of the womb, from a woman who died two days after delivery.

TAB. XII.—Ab eadem, qua praecedens, muliere; exhibet apertum plane a parte postica uterum cum vagina, quo situ Foetus, parsque inferior Placentae sub Foetus capite indicarentur. Placenta scilicet orificio uteri interno accreverat; eoque sub finem graviditatis dilatato, fatali inde divisione separata est.

FIG. 4.—*Plate XII.*—From a second subject, *viz.*, a woman who died of a flooding in the ninth month of pregnancy. The situation of the large vessels, which were injected, shows that the placenta was attached forwards and to the lower part of the womb.

A view of the womb and vagina fully opened on the back part, to show the situation of the child, and of the lower part of the placenta at the inside of the mouth of the womb; the occasion of the fatal hæmorrhage.

The vacant space which is seen between the inside of the neck of the womb, and the secundines was full of the clotted blood in the dead body.

It had been intended to issue the work in ten plates but when these were completed another favourable subject for dissection was obtained and subsequently others, so that ultimately

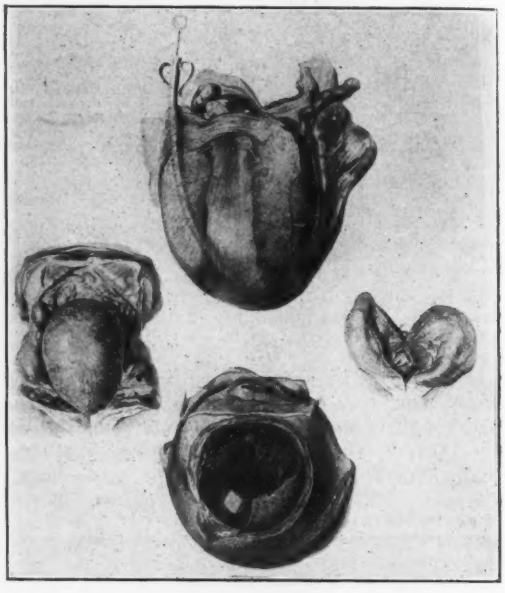
thirty-four plates were engraved. The drawings were made as soon as possible after the dissections were made. From these original drawings in red chalk which are now in the Hunterian Museum at Glasgow the copper-plates were made under the superintendence of Sir Robert Strange, who was not only a master in the art of engraving but a personal friend of the author. Hunter pays him this glowing tribute: "not only for having by his hand secured a sort of immortality to two of the plates, but for having given his advice and assistance in every part with a steady and disinterested friendship." Plates IV. and VI. are from his hand.

TAB. XV.—A quinto cadavere nono etiam Gestationis mense. Systema arteriosum Uteri quintuplici figura expressum. Fig. I.—Facies Uteri inversi, quo praesertim eo Placenta adhaeserat. Fig. II.—Anteriae partem Uteri anteriorem perrepantes. Fig. III.—Eaedem per partem posticam distributae. Fig. IV.—Eaedem Fundum permeantes. Fig. V.—Corpus Luteum in Ovario per medium diviso & Fimbriae Tubae Fallopianae.

FIG. 5.—*Plate XV.*—Five figures, from a fifth subject at the full time, to explain the arterial system of the pregnant womb.

1. The womb, inverted.
2. A fore-view of the outside of the same womb after it was dried and become so transparent that the arteries could be seen distinctly, as if they had been dispersed on its outer surface.
3. A back view of the same subject.
4. A full view of the fundus.
5. The right ovary and tube showing the corpus luteum, split through the middle.

At his death in 1783 William Hunter left a little incomplete volume, *Anatomical Description of the Human Gravid Uterus,* which was intended as a systematic description of the parts figured in the greater work, and an explanation of the physiology of these structures. It was completed and issued in 1794, by his nephew, Dr. Matthew Baillie, who was his chief executor. The earlier work Dr. Matthews Duncan declared to be one of the stable foundations of the science and art of midwifery. Writing in 1860 he said, "The more this great work on the anatomy of the human gravid uterus is studied, the more extraordinary and unparalleled will its accuracy be found in every particular."



TAB. XXVI.—Decimum cadaver, quinto graviditatis mense. Exhibetur status Uteri retroversi. Fig. I.—Apertum decussata incisione. Abdomen, sed contractiori forma exhibitum, cum Vesica Urinaria praeter morem distenta. Fig. II.—Vesica Urinaria, forma pariter minutiori, per mediam divisa et ad imam partem aperta, ut situs Oris Uterini hic praeter naturam sursum spectantis appareat. Fig. III.—Contenta Pelvis omnia a parte postica. Fig. IV.—Uteri portione ac Deciduae parte sublatis, Foetus per pellucidas membranas, Chorion nempe et Amnion, conspicitur.

FIG. 6.—*Plate XXVI.*—From the tenth subject, in the fifth month, showing the circumstances of a retroverted womb.

1. The abdomen, fully opened by a crucial incision and the bladder enormously distended.
2. The bladder cut down through its middle, and opened, at its lower part to show the situation of the os uteri.
3. A back-view of the whole contents of the pelvis consisting principally of the retroverted womb.
4. The womb opened to show the secundines and their contents.

The volume portrays the character of the author; his unwearied perseverance, extreme accuracy and good taste, and his passion for exact truth which led him to have the plates made not as diagrams to explain any theories of his own, but to be strict representations of the actual dissections. William Hunter needs no other monument than this immortal work. His body moulders in the rector's vault in St. James Church, Piccadilly, between the remains of

Thomas Sydenham and Richard Bright, "a hero among his compeers", but his soul marches on in this masterpiece.

The writer wishes to express his indebtedness to Miss Hazelwood of the Winnipeg General Hospital who made photographs of the plates; to Dr. J. C. B. Grant, Professor of Anatomy, University of Manitoba, and to Dr. H. A. Wright for many of the facts in this paper.

DIFFERING OPINIONS

By W. H. Hattie, M.D.

Halifax

JANET GLEN DIED 17 DEC 1826
AGED 77
WM GLEN DIED OF SYNANCHE
TRACHEALIA 9TH MAY 1827 AGED 7½
AR GLEN DIED OF SYNANCHE MALIGNA
14TH MAY 1827 AGED 4½
STRANGER
Whether hath disease or medical ommission clad
maist in their last claith

The above inscription may be seen on a tombstone in the old St. Paul's churchyard, Halifax. It, at least, is with us yet—lest we forget.

"Where I killed ane a fair strae death,
By loss o' blood or want o'breath,
This night I'm free to tak' my aith,
That Hornbrook's skill
Has clad a score in their last claith,
By drap and pill."

This from a poem by Burns (Death and Dr. Hornbrook), suggests that the epitaphist of a century ago was a bit of a plagiarist. It also brings to mind that Pluto had a different reason for his complaint against Aesculapius than Death offers for his grouch against Hornbrook.

"There is no law or statute to punish the ignorance of blind Physicians, though a man lost his life by them; neither was there any man known, who had revenge or recompence for the evil intreating or misusage under their hands. They learne their skill by endangering our lives, and to make proofe and experiments of their medicines, they care not to kill us."

This is Pliny's aspersion on our profession, as Holland rendered it into our tongue. The would-be comforters of Job were at least more fastidious in their choice of words.

"And Asa in the thirty and ninth year of his reign was diseased in his feet, until his disease was exceeding great: yet in his disease he sought not the Lord, but to his physicians.

And he slept with his fathers, and died in the one and fortieth year of his reign."

The implication in these verses from second Chronicles, coming, as it does, from such unquestionable authority, is the most unkindest cut of all. But perhaps if Asa had been apprised of the importance of a health examination on every birthday, a less doleful tale would have come down to us.

Many there are who have written unpleasant things about the medical profession. Molière went so far as to make several books in order that our shortcomings might be adequately set forth. And funny men have joked about us quite as irresponsibly as though we were all akin to Aberdeen folk. *Cui bono?* Mr. Henry Ford is reputed to have been very willing to pay liberally for good jokes about a car for which he stands eponymist and to have used them for advertising purposes. We have been put to no such expense.

An explanation for mortality, which found its way into poetry and possesses the merit of great simplicity, is that doctors differ. We cheerfully admit the accuracy of a part of the charge, but our faith in *vis medicatrix naturæ* forbids its acceptance *in toto*. This is but preliminary to the observation that it is not only doctors that differ. In the classical writings, in the works of poets of all ages, and in the sacred scriptures, references to physicians are not all unkind. So if what goes before has irritated, we may remind ourselves of such things as Pope's assurance that a wise physician, skilled our wounds to heal, is more than armies to the common weal. Many other quotations, equally mollifying, spring readily to mind, but perhaps none is more satisfying than "The Physician" of one of our Canadian poets, Alexander Louis Fraser:

"Our beck or call he waits, or noon or night,
To homes of luxury, or low, thatched cot,
'Neath smiling suns, or when the fierce winds smite,
While oft the charms of Leisure are forgot.
One task is his—unto the human lot,
By countless ills begirt, to bring his aid,
As doth a gardener who rids his plot
Of noxious pests that lurk within the shade.
A shadowed brow tells how his cares are weighed
Lest fell Disease should o'er his skill prevail;
But when its deadly ravages are stayed,
And Health plants roses on the cheeks long pale,
Reward is his beyond mere earthly good,
As he beholds the tears of Gratitude."

W. H. Hattie

Professor Willem Einthoven, whose death has occurred at Leyden, was one of the most famous of modern physiologists. Born in Samarang, Java, in 1860, at the early age of 25 he was called to the Chair of Physiology at Leyden, and there he spent the remaining 42 years of his life. His publications are to be found in four languages, in journals of Physics, Physiology and Medicine.

Of his many discoveries and inventions those

connected with the electro-cardiogram and the so-called string galvanometer will remain the most famous. The heart has always been an organ of peculiar interest to laymen and to medical men alike. In many directions the diagnosis of its maladies has been improved in recent times, but the greatest single step forward was taken by Einthoven in his application of the string-galvanometer to unravelling the mechanism of the electrical phenomena of the heart-beat. Followed up particularly by Sir Thomas Lewis in London this application of physiological methods to clinically observed phenomena has led to a far better understanding of the cause of some of the commonest disorders of the heart, and therewith to improvements in their treatment. The beauty and originality of his methods, born of a genius for constructing the finest physical instruments, was unsurpassed in physiology or, indeed, in physics.

Einthoven well deserved the Nobel Prize for physiology and medicine bestowed on him for 1924. In the same year he was made an honorary member of the Physiological Society, and the respect in which he was held by English physiologists became personal as well as academic when he acted as their host on the Society's visit to Leyden. The latest of his English honours was foreign membership of the Royal Society, to which he was elected in 1926.

A MID-VICTORIAN NOVELIST*

It is doubtful if many of the present generation have read or ever will read any novels by G. P. R. James, nor is there anything of medical interest in them which warrants their being mentioned in the pages of a medical journal. The life of this author, however, which has just been published, recalls his relationship with one whose name has been perpetuated in "James' Powders," perhaps themselves forgotten by many in these days of multitudinous preparations.

The novelist was the grandson of the doctor who patented the powder. The preparation was long kept as a secret in the James family, but now may be found in the *British Pharmacopœia*, stripped of its mysteries, as *pulvis antimonialis*. The doctor, old Robert James, was a character who needed no notoriety from pill or powder, as he was a lifelong friend of Dr. Johnson and is mentioned in Boswell's immortal record. James seems to have had a no less irritable temper than his famous friend and would brook contradiction from him alone. When James died, Johnson said, in writing of a mutual meeting place, "At this man's table I enjoyed many cheerful and instructive hours, with companions such as are not often found—with one who has lengthened, and one who has gladdened life; with Dr. James whose skill in physics will be long remembered; and with David Garrick." Another remark of Johnson's in discussing the inventor of the powders was, "No man brings more mind to his profession."

His grandson may or may not have benefited from the lucrative "secret" of the famous powder. He acted as British Consul in 1853, at Norfolk, Va., and there made his acquaintance with yellow fever, but was fortunate enough to escape from the ravages of a visitation which made Norfolk comparable to the condition of London during the Great Plague. He was transferred to Richmond, there to encounter an epidemic of diphtheria, which was supposed to be a new disease; this he contracted, and attributed his recovery from it to the clearing out of his throat with lunar caustic.

We might have had a picture of John Hunter from G. P. R. James, as he married the daughter of a leading London practitioner, Thomas, who had been a dresser under Hunter. Thomas spoke of his first visit to the famous man as being characteristically set for five in the morning by Hunter himself, who was then found busy dissecting insects. The son-in-law must have been able frequently to hear Hunter talked of, but no account of any value appears of him in any of the novels. In one place only does Hunter appear and that was in the preface to a novel describing the trial of a man for the alleged murder of his ward, a case in which Hunter refused to commit himself to the assertion of other medical men that poison had been given. He insisted that the post mortem appearances amounted to putrefaction and no more. This refusal to draw conclusions without sufficient evidence was typical of Hunter, but incurred the sarcasm of the judges on the worthlessness of medical evidence. H. E. MacDermot

* Taken from the *Brit. M. J.*, of Sept. 24, 1927.

Clippings on Current Topics

THE MEANING AND METHODS OF SUCCESS*

By Sir Humphry Rolleston, Bart., K.C.B.,
Regius Professor of Physic in the University of Cambridge

Everyone at some time or another must ask himself the questions whether or not and how he can attain success; those problems, though visualized, should not weigh too heavily or constantly on the mind, for sufficient to the day is the burden thereof, and if this is well borne the future may be trusted to look after itself. No one, however confident or diffident, can tell what is in store for him or command success, but he can do better by deserving it. The vagaries of blind fortune, the chances of injury and illness, and more particularly the student's character still in process of formation, as much or more than ability and industry, are in the main the determining factors.

The average student is usually too busy with hard work and healthy play to think much beyond the goal of passing his examinations so as to be able to earn a living, or, if an old-fashioned hero-worshipper and vaguely ambitious, of following in the steps of a teacher; it is therefore perhaps not surprising if he seldom stops to analyze solemnly what exactly constitutes success. Yet surely it is desirable for his present guidance to formulate some conception of his ideal of a medical life.

Estimates of success have been made by Sir James Paget (1869), Sir Squire Sprigge (1906), and Mr. E. Corner (1920), on the basis of the only available material data—namely, attaining certain positions in hospital and private practice. These statistics brought out at different times are satisfactory, for they show that on an average 75 per cent of medical students qualify, and that of those who start in practice 66 per cent have reason to feel justified with their choice. But apart from freedom from anxiety about the means necessary to provide for dependents and to live in fair comfort, what are the essentials of a right conception of success in medical life?

Forms of Success

There are many kinds of what may be called success—the fashionable and financial, the intra-professional, the scientific and intellectual, and the humanitarian. The obvious hall-marks of success in the popular view are, of course, a large income and a title; in all walks of life these certainly point to achievement and must not be gainsaid or their value minimized. But they may be and often are due more to commercial astuteness than to those finer qualities of sympathetic imagination and unselfish wisdom which go to make up the character of the ideal healer. It must not, however, be assumed that the combination of the best success is incompatible with, or so often divorced from, the financial as those without experience of either may believe.

Another and a potentially wider conception of success is to get what you want, be that what it may—riches, fame, affection, troops of friends, so that all men speak well of you. But as this, like the previous form of vaulting ambition, may in George Moore's words, become

> "Like Dead Sea fruits, that tempt the eye
> But turn to ashes on the lips,"

and, bearing in mind Oscar Wilde's epigram that "there are two great tragedies in life, not getting what you want—and getting it," the definition should be expanded into that given by Osler, "getting what you want and being satisfied with it." Many agree with Robert Louis Stevenson that "To travel hopefully is better than to arrive, and the true success is in labour."

A high ideal is to make some great discovery or reform that permanently benefits mankind, to relieve, or preferably prevent, human suffering, and so to leave the world better than it was before. Some of these original investigators, inventors, and reformers have not been properly recognized during their lifetime and so, because the world was not then ready for them, must have appeared to be failures, but—

> "Not all who seem to fail have failed indeed,
> Not all who fail have therefore worked in vain,
> For all our acts to many issues lead."
> —*M. I. Fortescue-Brickdale.*

This most enviable ability for original discovery is given to few, but there is another form of success within the reach of ordinary mortals, not indeed as the outside world understands and uses the word, but from the individual's own point of view: it is to preserve your own peace of mind and respect by the consciousness of honest work well done, and duty carried out without fear or favour, in making others better and happier in body and mind, and by freedom

* An address (abridged) delivered to students of St. George's Hospital, Oct. 1, 1927. *The Lancet*, Oct. 8, 1927, p. 769.

from discomfort and regrets for any action mean and contrary to the golden rule to "do unto others as you would they should do unto you."

Methods of Attaining Success

To follow the wrong profession is a tragedy and a sure bid for unhappiness and failure. But when what seems to be the right choice has been made, what are the further essentials? Obviously to start with, as in other professions, a thorough knowledge of the science and art—the two Janus-like faces—of medicine; and not only this, but to remain throughout life students, ever on the look-out to observe and learn, for there is no trace of finality about medicine, especially in these days.

Mental ability alone is not sufficient, though it goes a considerable way towards professional success. "A physician," said Osler, "may possess the science of Harvey and the art of Sydenham, and yet there may be lacking in him those finer qualities of heart and head which count for so much in life." Peter Mere Latham, one of the great clinical physicians a century ago, when our science and art were infinitely less detailed and specialized than now, wrote:—

> "Knowledge may be an incumbrance as well as a help. Many men know more than they are able to wield. There is a point (I believe) in the acquisition of knowledge (and this point varies infinitely in different individuals) beyond which, if more be acquired, the whole mass becomes useless to its possessor. I am acquainted with men who never have *done*, and never can do anything, because they know too much; and I am acquainted with men possessing comparatively small knowledge, so dexterous in its use that they have ridden over the heads of others far, very far, their superiors in acquirements."

Though reading maketh a full man, too much may induce mental dyspepsia, breed excessive obedience to authority, and so destroy any originality and independent thought. Read we should, but let it be methodical, with discretion, and accompanied by critical analysis and digestion, so that the state of the stuffed Strasbourg goose be not the result. As a practical method of analysis, a written abstract made at the time serves a double purpose; not only does it impress the details on the tablets of the mind much more effectively than mechanically underlining the book when sitting in an easy chair, but is most useful for future revision. It is a common mistake to measure the amount of work by the clock; the real criterion is not the number of hours spent, but the degree of concentration brought to bear on the subject. Concentration produces the greatest effect in the minimum time and is the economical secret of the successful and busy man.

There are in addition to other factors to be considered, especially a knowledge of men and womenkind which is so important in the treatment of the sick. Though, like most epigrams, that to the effect that "one-quarter of savoir and three-quarters of savoir-faire make the successful practitioner" may be an exaggeration there can be no doubt of the value of the personal equation in gaining the confidence of patients, their relations, and professional brethren. A man should, of course, have the requisite professional knowledge, but he must be able to make full use of his acquirements. This necessary personality is not shown by a bedside manner with a suggestion of pompous superiority; it is the result of getting inside the patients' minds so as to think their thoughts, feel their feelings, and thus understand their mentality and anxieties so thoroughly that the medical man is obviously their friend with their interests so entirely at heart that nothing else counts. This is not an actor's mask, but the outward and visible expression of true charity and forgetfulness of self. I would like to subscribe to the following from an address given by my father in 1874, when distributing the prizes at St. Mary's Hospital Medical School:—

> "I believe that the rule 'put yourself in his place,' based on what modern philosophers call the principle of altruism, and what is found expressed plainly enough in much older language than theirs, is the rule which, if I were confined to the choice of one single maxim to be given to a young doctor just entering upon the responsibilities of practice, I should choose for that maxim. Sympathy is truly called a divine gift, and it does assuredly give a superhuman power. I presuppose, of course, patience in investigation and carefulness in ratiocination; but such is often the obscurity, intricacy, and complexity of a medical problem, that in the ultimate resort, it is upon intuition rather than upon syllogism that its true solution depends. It is to the man who has the touch of genius, that strength of imagination, which enables him to put himself in the patient's place and thus do full justice to him, that there 'ariseth up light in the darkness.' It is for want of all this that 'great men are not always wise'."

The faculty of inspiring confidence, like the love of children and dogs, may be inborn, for there undoubtedly are men highly esteemed and of acknowledged ability, but whom none of their friends think of employing professionally. A want of appreciation of his patients' state of mind, which is naturally focused on their ailments, may allow the doctor to discourse on his hobbies and private interests; whereas from his patients' point of view his raison d'être is solely to discuss their urgent needs. No doubt attempts to distract them from themselves have their place and value, but the time for this is after, not before, a full, often it must be admitted tedious, hearing and consideration of their troubles so as to unburden their minds and ensure complete satisfaction. In doing this there must be calmness without coldness, decision without dour dogmatism, friendliness but firmness. It may be

difficult to steer between saying too little and talking too much, and while avoiding garrulousness there is the temptation to imitate those who by a sententious or somewhat cryptic phrase get out of a difficult situation for the time, but seldom satisfy their patients' wants. Honesty and truth are essential, but what may at the time seem the whole truth should not always, in the light of human fallibility and his best interests, be communicated to the patient. In making mistakes, as inevitably all must do, it is always better to err on the side of optimism than of pessimism. It was said of the late Sir William Osler that "he never left a sick-room without leaving behind renewed hope."

Relations with other medical men, popularly spoken of by the layman as medical etiquette or ethics with a thinly disguised dislike and a suspicion of a mysterious trade-unionism, are in reality a very simple matter—obedience to the golden rule of treating other colleagues as we would wish them to treat us. In carrying out this elementary principle there is nothing more obvious than total abstinence from adverse criticism of other medical men. Before judging of what another medical man is reported to have done or said it is instructive to bear in mind how rumour may transform your own actions and remarks out of all recognition.

Importance of Good Health

Almost as important as common sense and a sympathetic and healthy mind are good health and physique to withstand the strain of hard, continuous work. Doctors should not only advise, but in their own interests set a particular example in personal hygiene, proper recreation, exercise and holidays in spite of the numerous difficulties that surround them. From insomnia, headaches, and dyspepsia born of irregular and hasty meals a man may become angular, forgetful, and deficient in the qualities which make for his success with trying patients. On the other hand, great things have been accomplished by medical men crippled or physically handicapped in one way or another; incapacity in one respect may, by compensation and concentration, result in a high degree of excellence in another direction.

Terence's line, *Homo sum; humani nihil a me alienum puto*, applies most certainly to our humanitarian calling; but although wide culture, literary activities, and hobbies are good for the soul, these are for private use and not for parade. There is widespread belief, often no doubt erroneous, that a man cannot excel in more than one line, and so when a doctor is known, for example, as a writer of verses, most people are inclined to consider him too good a poet to be their common-sense guide, philosopher, and friend in unromantic medical matters.

BIONOMICS OF ANIMAL REPRODUCTION*

IN RELATION TO TUMOURS AND CANCERS

By Sir John Bland-Sutton, Bart., F.R.C.S. Eng.

The Theory of the Origin of Man from lower animals finds its surest foundation in Embryology, and some remarkable observations and discoveries relating to Tumours are concerned with this branch of Biology.

The greatest discovery man ever made about himself was when Von Baer in 1827 discovered, with the aid of a microscope, the human ovum. When ripe the ovum is a spherical cell 0.25 μ in diameter. The riddle of animal reproduction remained unsolved until Koelliker recognized the importance of the minute flagellate cells called spermatozoa. These remarkable cells were discovered by Hamm, a pupil of Leeuwenhoek, in 1677. They resemble protozoa, and were called spermatozoa. For many years they were regarded as parasites of semen until Wagner and Koelliker in 1814 proved them to be histological elements of the testis. No one has witnessed the union of a spermatozoon with a human ovum; it is a matter of inference from observations made on the eggs of starfishes and amphibians. In such creatures ova and spermatozoa mingle in the water and come into vital collision, and the act of fertilization can be seen under conditions permitting accurate observation. Biologists who have studied the process of fertilization notice that when mature ova are brought into the vicinity of sperm, the spermatozoa, influenced by their presence, make energetic efforts to reach them.

THE AQUATIC ORIGIN OF MAN

There is good evidence that man is derived from aquatic ancestors; the stages he passes through before becoming fit to be born indicate this: the fœtus in the womb lives as an aquatic parasite within its mother. When an ovum enters the uterus, the overgrown uterine decidua on which it rests secretes a fluid for its nourishment. This fluid is aptly named by Teacher, in a recent admirable research, uterine milk. The ovum can flourish in this medium about ten days. When the environment is favourable fertilization is effected by a spermatozoon—a flagellate cell flourishing in a fluid menstruum. The ovum, in consequence of its union with the head of the spermatozoon, becomes an oösperm, or zygote, and is quickly invested with delicate membranes. Of these, the outer, known as the chorion, quickly becomes shaggy with protoplasmic bodies called chorionic villi. These villi erode the adjacent decidua and firmly embed the oösperm; they are, in due course, converted into a placenta—the respiratory organ of the

* Delivered at Detroit, Mich., Oct. 3, 1927. *The Lancet*, Oct. 8, 1927.

fœtus. Fluid accumulates in the amnionic cavity and in due course the embryo disports itself actively as an aquatic creature in its own amnionic pool. In the early stage its skin is covered by a single layer of cells. Later this becomes double and the superficial layer is known as the epitrichium. About the eighth month of intra-uterine life the epitrichium is cast off mixed with grease from the skin-glands, and the delicate hairs known as lanugo. This soapy stuff is the vernix caseosa so conspicuous on the skin of the new-born child. The epitrichium persists on aquatic creatures such as frogs and salamanders and protects their skin from maceration. When the human fœtus, as an aquatic creature, disports itself in the amnionic hydrosphere the epitrichium and vernix caseosa protect it from maceration. Occasionally the epitrichium persists and the fœtus dies; in such circumstances when discharged from the uterus, it presents a weird appearance and is known as the Harlequin fœtus.

The human fœtus is an aquatic mammal, its blood being oxygenated by its mother's blood by means of the placenta. At birth it is expelled from the uterus; discards the placenta, and becomes a lung-breathing creature.

Few things made a deeper impression on my mind than when, as a child, I realized that the tadpoles, which emerged from the frog-spawn in the ditch bordering my playground, turned into frogs and jumped among the long grass in the paddock. It was my earliest lesson in embryology. When I became absorbed in anatomy and morphology the changes in the branchial bars, as the aquatic tadpole transforms into an air-breathing amphibian, became more interesting, especially on learning that in man their chief representatives are the delicate chain of ossicles—malleus, incus, and stapes—in the tympanic cavity. It requires little imagination to realize that "the first landmark in the ascent of man was when the frog first found voice and left the water." but true to its origin, *the frog must return to the water to spawn.*

Recently Leathes,* in an admirable summary, concludes that life consists in organic compounds continually reforming themselves and that the sea is the native environment originally of all forms of life. The importance of water is emphasized by the knowledge that the greater part of our bodies (two-thirds) is water.

CHORIONIC VILLI

An ovum is propelled through the Fallopian tube in about three days. Normally the life of the ovum is spent in the cavity of the uterus, a suitable place for its reception and nourishment. When an ovum is attacked by a spermatozoon it burrows into the endometrium like a vigorous parasite. The initial effect of this invasion upon a woman is immediate arrest of menstruation; no one has suggested an explanation of this remarkable effect.

Thirty or forty days after fertilization the oösperm has undergone some wonderful changes. It has increased enormously and become a cyst with a thin delicate transparent wall containing a visible embryo, and its outer wall is shaggy with delicate tufts known as chorionic villi. In the early stages the villi are devoid of blood-vessels; they consist of an axis of delicate connective tissue supporting cells rich in protoplasm. These cells are peculiar in character and easily recognized with the aid of a microscope by competent histologists. The chorionic villi are the chief cellular elements of the placenta. The cellular caps of the villi possess erosive powers which enable them to erode maternal tissues and blood-vessels. Chorionic villi have become the subject of intense study. A century ago it was discovered that the curious product of conception known as the grape-mole (Trauben mole) is due to changes in the chorionic villi. Examples are preserved in most pathological museums. Scientific knowledge percolates slowly; this disease remained a curiosity until Sänger and Pfeiffer, in 1889, independently described a malignant type of uterine tumour, peculiar in structure, which attacks parturient women. Subsequent investigations by many observers proved that such perversion is associated with the chorionic villi. It is now well known as an exaggeration of the eroding properties of the villi; they penetrate the walls of the uterus and may invade the peritoneal cavity. When they erode blood-vessels, fragments of the villi are deported by the blood stream to the heart, lungs, bones, viscera, and brain, giving origin to "secondary deposits" and sometimes kill the patient with astonishing speed.

Examples of the spontaneous disappearance of chorionic cancer have been reported. This betrays its alliance with the placenta which is a temporary organ.

The natural history of chorionic villi illustrates in a remarkable way the distinguishing features of the cancer cell; for example, its power of independent growth, erosiveness, and vitality which enable it to undergo dispersion and establish itself in parts of the body remote from its origin.

The natural history of the placenta is astonishing, but facts have been gradually accumulating which increase our astonishment.

The placenta dominates the life of the fœtus; the termination of its intra-uterine life coincides with that of the placenta, and at the end of 280 days, if the child be not expelled, the fœtal circulation stops, the babe dies, the placenta dies, and is slowly absorbed. It is significant that a ripe placenta never becomes malignant. The villi—the immature elements—are the source of chorionic cancer.

The pathologist's interest does not end here.

OVARIAN DERMOIDS.

Misdirected Embryologic Energy.

When the wonderful effects which follow the vital collision of a spermatozoon with an ovum

* *The Lancet*, 1926, ii, 365.

were unravelled by embryologists, the spermatozoon seemed to be the essential factor in initiating developmental changes in the ovum. There are reasons for believing that this privilege is not peculiar to the tailed-cell. Ovarian dermoids are familiar to surgeons to-day, but fifty years ago they were regarded as curious tumours usually found after death. With the establishment of ovariotomy they were proved to be common tumours; all organs normal to a fœtus have been found in them, except the reproductive gonads. Skin with all the elements common to it, lanugo, hair, glands, and nails. Brain tissue, choroid plexus, and spinal cord. Eyes, teeth, cartilage, and bone. Trachea with mucous membrane and thyroid gland. Intestine and liver. The essential element is a skin-covered lump which often resembles a mammary gland with a nipple surrounded with an areola. Sometimes a rudely shaped head and a stunted limb. These ill-formed lumps, known as embryomas, represent an ovum which has developed without the stimulus of a spermatozoon.

Whilst pathologists were puzzled by such occurrences, Loeb induced the eggs of starfishes to segment by adding soda-water to the sea-water of an aquarium—shock fertilization. Later, Batallion induced complete embryogenesis in the eggs of grass frogs by gently puncturing them with extremely thin metal, or glass stylets dipped in frog's blood. It is now a common experiment in biological laboratories in springtime to produce "fatherless frogs." These experiments have an important bearing on the origin of ovarian dermoids and support the opinion that they are due to the activity of ova.

The nature of ovarian dermoids has engrossed my attention for nearly fifty years. These tumours in some instances weigh nearly fifty pounds. Gradually I realized that the mass of grumous stuff which often forms the greater part of the tumour is excrementitious. The embryoma, the essential part of the tumour, is skin-covered and the skin sheds epidermis, lanugo, hair, sebum, &c., hour by hour, day by day, month by month, and year by year, until the accumulated rubbish makes the tumour conspicuous.

I have often wondered at the frequent presence of skin, hair, and teeth in dermoids and pondered on the absence of intestine. How blind have I been!

A peculiarity of the cubical cells lining the gastro-intestinal canal is the large amount of colloid material which forms in them under pathological conditions. The biggest tumours which form in women are ovarian dermoids. Many years ago I urged that the membrane lining the honeycomb chambers of these huge cystic masses was mucous membrane. Gradually I became convinced that they are embryomas in which gastro-intestinal epithelium is dominant.

In ovarian dermoids skin prevails, and the accumulated rubbish—sebum, epidermis, lanugo, and teeth—is detritus from the skin.

In ovarian colloid cysts mucous membrane prevails. The accumulated stuff is pseudo-mucin furnished by the gastro-intestinal epithelium of the embryoma.

Between the extreme types there is every gradation of misdirected embryologic energy. These tumours arise in ova which develop independently of spermatozoa. When an embryoma is well organized the character of the dermoid is easily recognized and it is non-malignant. They endanger life by their bulk and septic infection to which they are liable, usually from the intestine.

Although I have spent much time in studying the minute structure of ovarian dermoids I have not detected in them any evidence of testicular tissue or chorionic villi. In 1902 Schangenhaufer discovered in a testicular dermoid, tissue identical with chorionic villi. His observations have been confirmed by other histologists. In some instances the tissue closely resembles that of the grape-mole.

It is worth mention that among the peculiar tumours which occur in the ovaries of adult women, known as papillomatous cysts, there is a variety in which the microscopic structure is like that of chorionic cancer. This variety is malignant and is disseminated by the blood stream. The secondary tumours erode bone with facility. In one example under my observation the secondary growths occurred in the superior mediastinum, and bud-like processes eroded the manubrium of the sternum, and appeared as currant-like nodules under the skin.

Papillomatous cysts of the ovaries are, as a rule, bilateral and occur in women between the twenty-fifth and fiftieth years of life.

It is difficult to escape from this conclusion:

PREGNANCY IS THE EPITOME OF A PARASITE INFECTION.

The fœtus may be regarded as a tumour growing within its mother, the consequence of an infection by a parasite—the spermatozoon. It is a strange eventful history. Copulation is the method of infection by which flagellate protozoa —spermatozoa, introduced into the female—attack ripe ova in the uterine or the tubal passages, and convert one or more into oösperms (zygotes). The oösperm embeds itself vigorously in the ripe decidua. The first effects of the infection are a local reaction—the arrest of menstruation; and a constitutional response expressed by mammary activity—the secretion of milk; and usually pigmentation of the skin localized to certain definite situations. The uterus, in a marvellous manner, adjusts itself to the growth of the fœtal tumour, and at the end of 280 days the death of the placenta coincides with labour and the expulsion of the fœtus and its membranes. The fœtus discards the placenta and becomes an air-breathing mammal, leads an independent life, becomes in due course mature, and seeks opportunities for reproducing its kind.

Pathological changes sometimes arise in con-

XUM

nection with the accessory structures, especially the chorionic villi and the placenta, which jeopardize the successful development of the embryo and the life of its mother. We know in relation with ovarian and testicular dermoids that the more complete the development of the embryo the less harmful are the consequences to the mother; but when the development is perverted and the tissues nondescript, the gross products are often notoriously malignant. This holds good for uterine development.

PARTURITION.

Childbirth is a natural operation, but like a surgical operation has its risks and sequences. Of these, the two most important are sepsis and cancer, one is immediate and the other deferred.

In spite of the brilliant results which ensued on the conquest of sepsis and the treatment of wounds, child-bed fever persists. It is true that endemic puerperal fever disappeared when Listerian principles were applied, but the sporadic form persists, and will persist, until parturition is conducted on the same strict methods as surgical operations. Take, for example, Cæsarean section. In 1860 this ancient operation had an enormous mortality. To-day it is safer than normal delivery at term, since surgeons adopted aseptic methods.

In order to reduce the risks of parturition to the level of those attending surgical operations, a parturient woman should be treated on the same lines as a prospective surgical patient. *She should not be ashamed to wash the gate-of-birth with the same diligence and care as she washes her face.* Such toilet is of the utmost value as a protection against post-partem sepsis.

Chronic ulcerating septic fissures in the walls of the birth-canal are the lurking places of pathogenic germs, and potential sources of uterine infection and cancer.

Abstracts from Current Literature

MEDICINE

The Rationale of Tests of Renal Function. Fishberg, A. M., *J. Am. M. Ass.*, June, 1927, lxxxviii, 2019.

The specific gravity of the urine is the best indication of the ability of the kidneys to concentrate. The various tests of kidney function now in vogue were examined critically, and the conclusion arrived at that the most reliable test is the so-called "two hour test" and its modifications. Fishberg suggests the following practical procedure: "About 6 o'clock in the evening before the test is begun the patient has his usual supper which should not contain more than about 200 c.c. of fluids. After this he neither eats nor drinks anything until the test is over. Before retiring the patient empties the bladder; this urine is discarded. On awakening in the morning he passes urine, which is kept in a separate bottle. He remains in bed and urinates an hour later and again an hour after this, each urine being kept in a separate bottle. The specific gravity of each of the three specimens is measured and the highest taken as the patient's maximum." If kidney function is unimpaired this will be above 1025. In severe forms of kidney disease the specific gravity approximates that of blood, namely, about 1010.

Polyuria in such cases indicates that the kidneys are effectively excreting the proper quantities of solids, and no retention of these occurs. This is the case in a "compensated" stage of kidney disease. Decompensation is characterized by reduction in the amount of urine with low specific gravity, and retention of solids that should be excreted. HAROLD N. SEGALL

Note on the Occurrence of an Unusual Form of Gallop Rhythm. Connor, L. A., *Am. Heart J.*, June, 1927, ii, 515.

Ten cases exhibiting an unusual form of gallop rhythm were observed by the author in the past fifteen years. This rhythm consists of a great exaggeration of the ordinary early diastolic gallop: the third sound is so loud and sharp as to dominate the whole cycle of sounds. Four patients with marked cardiac failure, in the early stages of improvement due to rest and digitalis therapy exhibited the phenomenon for several days; then as further improvement took place, the loud sound disappeared. In four other instances the gallop rhythm appeared in patients with rheumatic heart disease, but without cardiac failure. The ninth case was in an elderly woman who exhibited Cheyne-Stokes breathing, and the tenth occurred in an elderly man with hypertension, who exhibited the phenomenon as he was recovering from cardiac failure. In two cases the gallop rhythm was heard during auricular fibrillation with slow ventricular rate. In one case with normal rhythm interrupted by infrequent premature ventricular beats, the loud sound gradually diminished in intensity during the last eight or ten beats before a premature beat, and then with the first two beats after the premature one the sound continued to be found but with the third beat it suddenly be-

came very loud. No extensive discussion of the cause of this loud sound is given, but it is suggested that it is probably an accentuated form of the ordinary third sound.

HAROLD N. SEGALL

Treatment of Hypertension. O'Hare, J. P., *Am. Heart J.*, June, 1927, ii, 511.

Vascular hypertension appears to be hereditary in origin; the author suggests that as a preventive measure marriages between two individuals coming from "vascular" families should be avoided. Prophylaxis should be considered in the cases of children whose parents have hypertension. Such children should be advised to avoid the development of excessive ambition and undue activity as these conditions tend to accentuate hypertension. The treatment of a case of hypertension must be adapted to the individual patient. A moderate degree of hypertension calls for no specific treatment; in such instances it is often advisable to make no mention of it to the patient, but to tactfully suggest a regime of more rest and relaxation. In cases of more marked hypertension the chief therapeutic factors are: (1) Rest; frequent vacations, the habit of lying down for half an hour after the noon meal, reduction of activities and responsibilities. (2) Exercise in the form of walks, at first short distances then gradually increasing ones; if the patient is unable to walk, daily massage is indicated. (3) One or two daily bowel movements; a mild saline is the best cathartic. (4) A diet of small bulk and with moderate restriction of protein, salt, fluid and calories. The author has seen no value in extreme salt restriction. (5) Drugs: bromides are probably the most generally useful; iodides are of value only when there is a positive Wassermann reaction. Drugs for reduction of blood pressure are of little or no value. The nitrites are good for the relief of symptoms such as angina pectoris, nocturnal smothering and cramps in the extremities. Digitalis is never contra-indicated by the level of the pressure, no matter how high; if there is heart failure, it should be treated. Mistletoe in the form of "Intrait de Gui" is effective in the treatment of headaches. Organic extracts such as that of the ovary for the relief of nervous tension in some hypertensive women may be used. Parathyroid has not proved effective. The author has had no successful results from the use of liver extract.

HAROLD N. SEGALL

The Identity of Spirochætes and Bacilli Fusiformes—Heliconemæ Vincenti. Sanarelli, G., *Ann. de l'Institut Pasteur*, 1927, vii, 679.

This is an important contribution, as it seems to clear up the vexed question of the relationship between the so-called *S. Vincenti* and *B. fusiformis*, organisms found constantly in cases of Vincent's angina and "trench mouth."

It may be said at once that Sanarelli believes in the identity of the two forms. The spirochæte in question will not grow on ordinary media, but it will grow well when *B. mesentericus vulgatus* is associated with it. Apparently, the soluble products of growth of the latter organism are essential, for the same result is obtained when old filtered cultures of *B. mesentericus* are used as a culture medium. In these media, after some hours, the original spirochætes appear in the form of fusiform bacilli. This change in morphology is not permanent, however. After several transfers to peptonized water a return to the spiral form gradually takes place.

The identity of the two forms is also supported by the observation that the serum of rabbits immunized against living cultures of spirochætes, has an equal agglutinating value in respect to the spirochæte and the *B. fusiformis*, and, further, in an animal dead of large doses of *B. fusiformis*, intraperitoneally or intravenously, organisms of the spiral type can be recovered.

Apparently, the amount of oxygen present under conditions of experiment is an important factor. A scanty oxygen supply means spirochætes: a greater or more prolonged effect of oxygen means bacilli; this seems to be confirmed by clinical observations.

A. G. NICHOLLS

A Procedure for the Differential Diagnosis of Cerebral Hæmorrhage. Wilder, J., *Wiener klinische Wochenschrift*, 1927, xxxvi, 1158.

The author remarks that while the science of cerebral localization has proceeded apace, differential diagnosis of the type of the lesion, always difficult, has not advanced, and yet, in the majority of cases the latter is more important from the standpoint of etiology, prophylaxis, and treatment. A variety of cerebral lesions were studied, such as hæmorrhage, softening, tumour, abscess, angiospasm, multiple sclerosis, gumma, hysterical hemiplegia, and paralysis agitans. For the unravelling of the diagnostic tangle the author has applied Van den Bergh's method of estimating the bilirubin content of the blood (*der Gallenfarbstoff im Blute*, Leipzig, 1918). In a general way, the method consists in precipitating the protein of the blood with alcohol, which removes at the same time the bilirubin. When diazo-reagent is added to such an extract a red colour is produced. The reading is taken in a colorimeter, against a standard colour solution. Normal blood serum contains a trace of bilirubin, and, after checking the figures of several observers, Wilder adopts the proportion of 1:200,000 as the border-

XUM

line between the normal and the pathological.

Applying the test, a series of 13 cases of cerebral hæmorrhage, controlled by autopsy, gave readings between 1:95,000 to 1:167,000. Cases of softening, tumour and uncomplicated abscesses gave figures uniformly above 1:200,000 and often much higher.

Care must be taken in estimating diagnostic value, to exclude other conditions, which may give a high bilirubin content. Fortunately, these are obvious, such as icterus, post-operative hæmatoma, and lung infarct.

An important point is referred to. This is in connection with the cerebral hæmorrhage of chronic nephritis. Some observers, notably Bauer and Spiegel, have found low figures for the blood-bilirubin content, such as 1:500,000 to 1:800,000. It is conceivable, therefore, that, when cerebral hæmorrhage occurs in the course of chronic Bright's disease, a low figure may be merely brought up to a normal one, and the significance of the finding be overlooked. Wilder, however, has always found a high index in his cases. Further work should be done to determine, if possible, the relationship, if any, between the size of a hæmorrhagic lesion and the time of appearance and the duration of a positive blood-bilirubin test.

Wilder concludes that the test in question is a valuable diagnostic aid. A figure above 1:200,000 is in favour of the presence of cerebral hæmorrhage. A. G. NICHOLLS

SURGERY

A New Method for the Removal of Stone in the Ureter. Illievitz, A. B., *Surg., Gynæc. & Obst.*, April, 1925, 576.

Since the instrument described in this article is now being sold as a "Dourmashkin" catheter, it may be of interest to recall Dr. Illievitz' work. He pointed out the various disadvantages attending the modern method of removal of stone in the ureter, including the dilating of the ureter with metal olive bougies, and Garceau's dilating catheter. His own idea was a modification of Rubin's insufflator, an apparatus used for determining the patency of the Fallopian tubes. At first he tried simply ballooning the ureter with air and withdrawing the catheter slowly, so that the stone could follow. By this process of ballooning and gradual withdrawal, a stone in the ureter could be brought down very low but it was usually found to stick at the opening of the ureter into the bladder.

To overcome his difficulties he tied a small piece of thin rubber to the end of the catheter, so that by confining the injected air in this way he found he could produce ballooning of the ureter to any desired extent, and keep it there. The experiments were repeated and the stone was brought down the ureter in the path of the balloon at the end of the catheter. When the wall of the bladder was reached the ureter was dilated repeatedly, and at the last time it was withdrawn quickly in a partially inflated condition. The stone was invariably found to follow the catheter into the bladder.

This work was all carried out under experimental conditions on animals, but the author has found it easy to insert his modified catheter during a routine cystoscopic examination. The ordinary dental chair or operating table with stools for the feet he found to be sufficient to allow the descent of the stone by gravity.

He considered this method simple and effective, since it does not have the disadvantages of metallic dilators, with their possibilities of trauma. H. E. MACDERMOT

Late Recurrence of Peptic Ulcer after Gastro-Enterostomy. Davis, L. *Surg., Gynæc. & Obst.*, 1927, xlv, 3, 294.

This paper brings out the conflicting views regarding the merits or otherwise of gastro-enterostomy in the treatment of ulcers both of the stomach and duodenum. Emphasis is laid on the difference between peptic and duodenal ulcer: they may have a common cause, but beyond that are quite distinct. Apparently there is almost complete agreement amongst surgeons that in treatment of gastric ulcer gastro-enterostomy alone is not sufficient. Moynihan and Balfour both strongly advocate partial gastrectomy.

The divergence of views begins when duodenal ulcer is considered. The majority stand by gastro-enterostomy, and adduce impressive statistics in support. Balfour, for example, reported the end-results in 1000 cases of gastro-enterostomy for duodenal ulcer operated on at the Mayo Clinic more than ten years previously. He found satisfactory results in 88 per cent of these cases. Sherren of London has reported 92.6 per cent in 500 cases as being quite well two years after this operation. Dr. Davis, however, has collected seven cases who after a period of well-being for three and a half to ten years after this operation, returned to hospital with gastro-jejunal ulcers. The number is small, perhaps, but is large enough to disturb his confidence in the lasting security of results from gastro-enterostomy.

Others have reported similar unsatisfactory results. Lewisohn traced sixty-eight cases for periods of four to nine years after this operation for duodenal ulcer, and found that 18 per cent required a second operation for gastro-jejunal ulcer. Another 16 per cent had the clinical signs and x-ray findings of gastro-jejunal ulcer. In consequence of these findings some workers

advocate partial or subtotal gastrectomy as the method of choice in the treatment of gastric or duodenal ulcers.

Nothing new has been added to our knowledge of the origin of gastro-jejunal ulcer, and consequently, measures designed to prevent their recurrence must all rest on rather insecure theoretical foundations. Dr. Davis concludes that the newer and more radical methods advocated by some should be left to the few to work out, rather than that they should be adopted generally. Gastrectomy should be reserved for severe cases of gastric ulcer and those intractable cases of recurrent ulcer following gastro-enterostomy. If gastro-enterostomy is performed for duodenal ulcer definite indications should be present; medical treatment should have had a fair trial, foci of infection elsewhere in the body should be removed as far as possible, and, finally, the subsequent dietary regimen should be carried out with great care.

H. E. MACDERMOT

Control of Hiccup by Inhalation of Carbon Dioxide. Sheldon, R. F., *J. Am. M. Ass.*, 1927, lxxxix, 14, 1119.

Whatever the explanation may be, it seems fairly certain that carbon dioxide carefully administered, helps to regulate respiration: as one speaker said, in discussing the present paper, it is the "best throttle for the control of smooth anæsthesia." Hiccup, except possibly in the epidemic idiopathic type, is a spasmodic contraction of the diaphragm, caused by an abnormal stimulation of the respiratory centre. The suggestion was made, therefore, that carbon dioxide, with its well-known powers of stimulation of the centre, would help to overcome this abnormal and irregular type of stimulus, and Dr. Sheldon reports a small series of cases in which this method gave satisfactory results.

The carbon dioxide was administered either with the Henderson-Coburn machine, in which the gas is mixed with air, and the concentration can be controlled by a sight feed; or with the Gwathmey apparatus. The percentage of gas can be cut down if too deep breathing is produced, or if discomfort is complained of. A mixture of 5 or 5.6 per cent with air or oxygen is sufficient.

The series included a case of epidemic hiccup which required administration at varying intervals for about twelve hours. Even though it was not checked at once periods of rest were obtained, with gradual recovery. The other cases were all post-operative. In some the spasms required long periods of administration of the gas.

It is pointed out, however, that since this method produces increase in blood pressure and exertion by muscular effort, it may cause some exhaustion and may not be advisable in all cases. In most of the cases the patient welcomed its administration, as it gave no discomfort, and frequently stopped the hiccup on the second to eighth breath.

H. E. MACDERMOT

Toxæmia of Acute Intestinal Obstruction. Brockman, R., *The Lancet*, August, 13, 1927.

The author points out that "ileus" is not a case of mechanical obstruction but of paralysis, and that surgery for this reason cannot cure it. Two causes are considered, bacterial action and the toxic element in obstruction fluid.

There is apparently some process in the healthy upper part of the small bowel that prevents the existence of micro-organisms: is this process or function necessary to the whole organism? Obstruction fluid contains a "toxin" that when injected into an animal causes death with symptoms like those of the original disease. Again, this poison is not formed in dead tissues but from living cells. One series of experiments with isolated loops of duodenum seems to show that this poison was formed by the action of bacteria on the duodenal mucosa, and some vital reaction interfered with.

The author by altering the experiment and preserving the continuity of the intestine outside the isolated loop prolonged the dog's life for many days. In another case he invaginated the ends of the loop. This dog died of perforation but did not present the usual toxic symptoms of "ileus". The question is raised, can the answer be the absence of bile from the intestinal mucosa? Mr. Brockman describes the results obtained by him in acute ileus by injecting human and ox bile into the rectum without discussing the theory involved. Dilutions of one-third strength were used and some very striking recoveries effected. When human bile is used the tongue clears up, the hiccup lessens and disappears and the tense distended abdomen becomes soft. Naturally, much more investigation is required but Mr. Brockman has undoubtedly raised some very suggestive points.

P. M. MACDONNELL

ANÆSTHESIA

Ethylene as an Anæsthetic for General Surgery. Cabot, Hugh, and Ransom H. K., *Ann. of Surg.*, 1927, lxxxvi, 255.

This paper is based on 11,607 operations done under ethylene anæsthesia in the last three and a half years. Ethylene alone was used in 70 per cent of cases; ether vapour was added in 27 per cent. In 3 per cent ethylene was used for induction and ether afterwards. Relaxation in the upper abdomen could not be obtained without the free use of ether. There is

an initial rise of blood pressure which causes, in operations upon the brain, an undesirable amount of bleeding, so that the authors have abandoned its use in these cases. There is a slight diminution of kidney function, but the writers attribute this to the operation rather than to the anæsthetic. Pulmonary sequels are no more frequent than after nitrous oxide. Ethylene is not explosive in the mixtures used for anæsthesia. It is the weaker mixtures which ignite. Naked sparks and flames near the operating room must be absolutely avoided. If cigarette smoking members of the staff cannot be excluded, the use of this anæsthetic is contra-indicated. W. B. HOWELL

Les résultats de 6,000 rachianesthésie. Results of 6,000 spinal anæsthetics. Ducuing, J., *La Presse Médicale*, 1927, xxxv, 1162.

The writer has been using spinal anæsthesia during the last fifteen years. He injects an 8 per cent solution of syncaine. In his opinion cardiac stimulants need never be given during the anæsthesia. Most of the alarm felt when signs of collapse appear are uncalled for. Three patients developed general anæsthesia as a result of spinal injection, and became unconscious, but recovered. One patient who had been operated on for appendicitis had, for three days afterwards, stiffness of the neck, Kernig's sign, photophobia and vomiting. At the age of six he had had an attack of encephalitis which was followed by stammering and athetosis. In four cases painful stiffness of the arms came on after operation and lasted for some hours. There was one case of paralysis of the oculo-motor nerve. Recovery took place in three weeks. There were three deaths—one followed operation for an enormous strangulated hernia in a man with a rapid irregular pulse. Another immediately followed the change from Trendelenberg to the horizontal position after an operation for general peritonitis due to perforated gastric ulcer. The third was during a Porro's operation for rupture of the uterus after prolonged chloroform anæsthesia. W. B. HOWELL

DERMATOLOGY

Intolerance to Sugar as a Factor in the Production of Some Dermatoses. Gordon, G. G., and Burgess, J. F., *Brit. J. of Dermat. & Syph.*, May, 1927, xxxix, 187.

The writers remind us that the association between diabetes mellitus and certain dermatoses has long been recognized by medical men, the control of the former being enough to cause the latter to disappear. They go a step further now in pointing out that even a temporary rise in the sugar content of the blood may produce a type of dermatitis, and that correction of the diet as regards carbohydrate may bring about a cure of these lesions when other methods have failed.

There is no special indication that sugar intolerance is the cause of any given dermatitis, but the cases reported by the authors fall into two groups. In one of these the condition developed during pregnancy and lasted until parturition had occurred, the other and much larger group comprised adults, most of whom had passed the age of fifty. Pregnancy is not uncommonly accompanied by an intolerance to sugar, and an eruption at this time which cannot be explained on other grounds should call for investigation of the sugar tolerance.

In the other group, the author learned to depend on the history of the case as pointing to sugar intolerance. In most of the cases there was the development of an intractable dermatitis in an individual past middle life, who had made no change in habits or occupation, and who had previously been free from such attacks. It might develop without any apparent exciting cause, or might be brought on by irritants which had had no such effect before, *e.g.*, the use of antiseptics by a surgeon. In most of the cases, however, the dermatitis developed on the exposed parts of the body, suggesting a lowered resistance of the skin to the ordinary irritants of everyday life.

Thirty-one cases are reported, in all of whom sugar intolerance was found. In seven of these there was considerable improvement on a sugar-free diet: eighteen were under observation for from one to six months, until the skin lesions disappeared. In several of these relapses were noted when sugar was again taken, and were again cured on the resumption of a sugar-free diet.

The authors suggest that sugar intolerance may be a factor with wide-reaching effects. They have had one case of complete relief from senile pruritus in a woman of 86, and several suggestive cases of rapid cure of purulent skin-lesions, such as sycosis and furunculosis. Further investigation along this line may show that it is a contributing factor in other dermatoses.

H. E. MACDERMOT

Obituaries

Dr. T. R. Hanley. In the tragic death last month in Toronto of Dr. Hanley there was removed from the medical world one of those splendid characters that so well typify the expression "the sane mind in the healthy body"—nor may one stop with this—there was taken from the brotherhood one whose kindly keen blue eye and well set frame usually made the passer-by stop and look again. A graduate of Toronto

DR. T. R. HANLEY

in Arts in 1909 and in Medicine of 1911, an interne at the Toronto General Hospital, he had developed into one of our most expert anæsthetists after several years of general work and after special studies on the subject of anæsthesia in New York, London, and Vienna. In later years, keeping steadily to his chosen line, he put forth several contributions of distinct value, among which may be noted, "Methods of Resuscitation"; "The Evolution of Surgical Anæsthesia"; and "Thyroidectomies under Local Anæsthesia and Analgesia." He was usually to be counted upon to take some part in the programmes or discussions in the anæsthesia sections of any meeting and he had familiarized himself with the methods used in inducing anæsthesia in many countries, including in his many visits to various clinics America, England, Austria and Ireland. At the time of his death he occupied one of the senior positions in the anæsthetic staff of the Toronto General Hospital.

Well known, respected and beloved by the profession to an unusual degree, Dr. Hanley had woven about him as well the romance which is always associated with brilliancy in athletics; athletic director at Varsity for some years, captain of champion hockey and lacrosse teams, standby of the Midland hockeyists in their championships, member of the champion Orillia lacrosse team in 1904, one of the lacrosse team which toured the world in 1907. He was known as one of the best trained athletes of his time, and it was always recognized that his sportsmanship was as splendid as his performances. Many are the friends and intimates who will be deprived of the encouragement always present in his greeting, and not only his immediate family but the profession as a whole is to be sympathized with in their loss of such a sterling and attractive character as "Tom Hanley."

Dr. Benjamin H. Champion. It is with the deepest regret that we have to record the death of Dr. Champion, which took place in the Vancouver General Hospital on Tuesday, September 13th.

Dr. Champion was born at Alverton, Prince Edward Island, in 1880. He was educated at the public and high schools and Prince of Wales' College, Charlottetown. He graduated in medicine from McGill in 1910, and came to Vancouver where, after a year as interne at the Vancouver General Hospital, he commenced practice. During the last few years Dr. Champion devoted himself more especially to genito-urinary work in which subject he took post-graduate courses at the Mayo Clinic, Chicago and New York.

Dr. Champion was a member of the Vancouver Medical Association since his arrival in the city and always took a keen interest in the work and was a regular attendant at the meetings. He held the position of Chairman of the Clinical Section for a year, and was afterwards a member of the Credentials Committee. He was a member of the Staff of the Vancouver General Hospital, devoting his attention chiefly to genito-urinary work.

Unassuming in character and quiet in manner. Dr. Champion was one of the most popular men in the profession. Always ready to assist his younger confrères with special knowledge from his chosen field, he will be remembered by many with regret and gratitude. His hobby was raising foxes and he was one of the first to popularize the industry in British Columbia. He is survived by his wife but leaves no children.

Dr. C. H. Christie of Wawota, who has been in ill-health for some time has recently died.

Dr. A. Hawk, one of the best known men of western Ontario, died in Galt early in October, after nearly 43 years of practice. A graduate of the old Toronto School of Medicine, he had also studied in Scotland and Germany. For many years he served in the city council and in 1902 was chosen Mayor of the town.

Dr. Heaslip died from the results of an accident at Owen Sound on the 28th of September.

Dr. Robert Kinney died at Brockville on September 26th, after an illness of several years. One of the best known educationists in the province, as the result of having taught for years in Brockville, Dr. Kinney had had as pupils many of the leading citizens of Brockville and vicinity. In addition to his medical and educational interests, Dr. Kinney had associated himself with politics and will be remembered as having run as an independent candidate in 1890.

XUM

Dr. Gordon E. McLean. The University of Toronto lost another of its sons last month, in the passing of Dr. McLean, of the Department of Health in New Brunswick. His death was due to ptomaine poisoning which developed very rapidly and proved fatal on the morning of September 12th. Dr. McLean was born in Collingwood in 1900. His early education was obtained in the collegiate school of that city, and after passing through it with credit he entered upon the study of medicine at the University of Toronto, from which he graduated with honours in 1926. Shortly after graduation he was appointed one of the physicians of the Jordan Memorial Hospital, Riverglade, N.B., where he did such excellent work that at the close of the year he was appointed one of the provincial tuberculosis diagnosticians by the Provincial Board of Health, a position which he held till the time of his death. Careful and thorough in all his work he was genial in his manner and quickly became a universal favourite.

Dr. McLean is survived by two brothers, Dr. W. C. McLean of Toronto, and his younger brother H. C. McLean at present attending classes at the university.

News Items

GREAT BRITAIN

Those who know their London will remember the boys of Christ Hospital, who formed such picturesque figures in their quaint Tudor uniform of a long blue ulster (whence the term 'Bluecoat Boys'), yellow stockings, a leathern girdle, "parson's bands", a large badge on the left arm, and with bare head. On rare occasions this striking combination has even been seen in the streets of far-away Montreal. But, since the removal of the school to Horsham twenty-five years ago the visitor to London only rarely sees the Bluecoat Boy. The original buildings of the school formed part of the old Greyfriars' monastery and the Institution is justly proud of its many famous pupils, among whom may be mentioned Charles Lamb, Coleridge, and Leigh Hunt.

Since the removal of the old foundation to the country, the greater portion of the original site has been utilized for the extension of the General Post Office. The remaining portion, accommodating the Grammar and Mathematical schools originally, was acquired by St. Bartholomew's Hospital. It is now stated that the last of the buildings is being demolished, to make way for the new surgical block of the hospital. It is expected that in about a month's time the foundation will be laid for this extension, which will cost about £200,000.

Through the gift of £40,000 by Mr. S. A. Courtauld, the Middlesex Hospital, London, is to have an Institute of Biochemistry. The new institution will work in conjunction with the Hospital, on the one hand, and the Bland-Sutton Institute of Pathology, on the other. The corner stone was laid by the donor on July 20th. The building is to be five storeys in height.

The Decline of the Birth Rate in England

The statistical review of the registrar-general for 1926 shows that the birth rate in England and Wales has now fallen below that of France, and, excepting Sweden, is the lowest of the principal European countries. The birth rate for 1926 was 17.8 per thousand of population. Excepting the rate of 17.7 in 1918, the last year of the war, which at that time was regarded as phenomenally low, that for 1926 is the lowest recorded since the establishment of civil registration in England. In view of the continued decline during the first half of the current year, it is probable that the rate for 1927 will be lower than that for 1918. The crude death rate was 11.6 per thousand of population, and was equal to that of 1923, the lowest on record. In 1924 and in 1925 the rate was 12.2 per thousand. The death rate from cancer was 1,362, or 26 per million higher than in 1925, and was the highest rate yet recorded. The suicides from poisonous gases, practically all of which were from coal gas, have shown a substantial increase in recent years, from 165 in 1917 to 943 in 1926. The general death rate and the infantile mortality are low compared with the rates prevailing in most of the other countries.

We learn with pleasure that Charles Darwin's house, where he did most of his epoch making work, has been purchased and presented to the nation. This was the fruit of an appeal by Sir Arthur Keith in his presidential address to the British Association. On reading the appeal Mr. George Buckston Browne, a retired genito-urinary surgeon, at once telegraphed Sir Arthur his desire to make himself responsible for the entire gift, his motive being to allow future generations to see Darwin's home, which, with its estate might otherwise pass into the hands of builders. The cost of the house, which is at Downe, in Kent, with some endowment fund, amounts to between $60,000.00 and $70,000.00.

Mr. Browne's offer is made on the generous condition of his being the sole contributor. He is an antiquarian and an enthusiastic collector, and his gift is an expression of his admiration for the work of the great naturalist. His wish is that the house, which at present is the property of Darwin's son, Prof. Francis Darwin, and is being used as a school for girls, should be restored as nearly as possible to its condition when Darwin lived there, to be shown without charge to visitors. He asks that some physician of slender means and good record be appointed to act as custodian. Sir Arthur Keith has suggested that the endowment fund might provide a prize every second year for the best contribution to biological knowledge.

The Council of the Royal Institute of Public Health is bestowing the Harben Gold Medal for the year 1928 upon Sir Ronald Ross, F.R.S., director-in-chief of the Ross Institute and Hospital for Tropical Diseases, Putney Heath, S.W.15, in recognition of his eminent services to the public health.

GENERAL

Moving pictures representing medical topics will soon become a fact; definite progress in the preparation of such a series by the American College of Surgeons has been announced. One or two pictures will probably be ready for exhibition before the end of the year. Well prepared moving pictures are recognized to be of growing importance in educational work for students, for post-graduate teaching, and for the public. The pictures will be available at a nominal cost by any university or hospital and their accuracy is vouched for by many noted authorities. No picture will be released until it has been passed by a special committee of the college.

The problems that confront the medical profession are much the same all over the world. In far off Japan it is found that young medical graduates usually refuse to locate in or near rural districts. To obviate this, if possible, a suggestion of the National Physicians' Association has been taken up by the health authorities of the Home Department. This is to the effect, among other things, that the competent minister may order the city, town, or village authorities to induce a medical practitioner, when necessary, to locate in the areas under their control, or else to increase the number of free medical stations. When this has been done a State subsidy, amounting to from one-sixth to one-half of the amount of money required may be allotted the local authorities out of State funds.

So the drift towards a Medical Civil Service continues.

International medical continuation courses in Berlin have been arranged with the help of the medical faculty of the University by the Lecturer's Association for the continuation of the medical courses. Some of the courses will be given continuously through the session. In the permanent courses there will be an opportunity for physicians who wish to gain practical experience from systematic instruction, to attend lectures in clinics, hospitals and laboratories for two or three months or possibly longer. During March and April special courses can be arranged. The office quarters are in the Kaiserin Friedrich-Haus, Berlin, NW 6.

During the month of July the sixth International Congress for the History of Medicine took place at Amsterdam. It was signalized by the assembling in the Municipal Museum of a wonderful collection of paintings, designs, sculptures, manuscripts, incunabula, medical books, medals and medallions. These had a triple interest, that of art, that of history, and that of medicine.

A remarkable series of "Lessons in Anatomy", fourteen in all, were exhibited, though perhaps the best-known, Rembrandt's Van Tulp in the Hague gallery, was represented by a small copy. Among the drawings were some of medical interest from the pencils of Breughel, de Vos, Rembrandt, Van Ostade, Gerard Dou and Teniers.

The most important of the incunabula were the famous *Anatomy* of Joannes de Ketham and the *de virtutibus herbarum, lapidum, animalium et mirabilis mundi* of Albertus Magnus.

The surgeons and anatomists present were delighted with the wonderful anatomical plates of Albinus, which are a veritable joy to the eye, and no less than twenty-six editions of Vesalius. Altogether, the exhibition was well-selected and of the highest interest.

NOVA SCOTIA

Dr. John Stewart's Fiftieth Anniversary of Graduation

On the evening of October sixth, the medical profession of Nova Scotia tendered a complimentary banquet to Dr. John Stewart, in celebration of the fiftieth anniversary of his graduation. Dr. Stewart was presented with a beautifully engraved address and a substantial gift from his many admirers in the profession. The dinner was presided over by Dr. E. V. Hogan, who was second to Dr. Stewart in command of the Dalhousie Hospital at the front, and who was chairman of the committee which arranged the banquet and presentation. Other members of the committee were Dr. M. T. Sullivan, Glace Bay, Dr. G. W. T. Farish, Yarmouth, and Dr. W. L. Muir, Halifax. Dr. Sullivan read the address, Dr. Farish presented the gift, and Dr. Muir read several of many messages from colleagues who were unable to be present. A large number of the profession from various parts of the province were in attendance, even the extreme points being well represented. In addition to the principal addresses, several veteran physicians were heard with much pleasure. Dr. Robinson Cox, of Upper Stewiacke, who had celebrated his eighty-sixth birthday only two days previously, and who is still in active practice, reminisced delightfully of a friendship with Dr. Stewart which had lasted for more than sixty-four years. Dr. Murdoch Chisholm, of Halifax, spoke appreciatively of Dr. Stewart's influence upon all with whom he had come in contact, and Dr. Arthur Kendall, of Sydney, laid emphasis on the loyalty to his native province which had led Dr. Stewart to resist the enticements of wider fields which had been open to him. No finer evidence could have been given of the warm affection and admiration in which Dr. Stewart is held by all classes than was contained in a note received by Dr. Hogan in response to his request for a bill for the engraving of the address, which had been undertaken by the Sisters of Mount St. Vincent College: "Surely you will do us the kindness of allowing us a small part in the efforts you are putting forth to honour a truly great and good man. We ask no other return for our services than to have you accept our work as a mark of esteem for Dr. Stewart and for the men who are capable of such whole souled appreciation of a leader in their profession." In connection with this touching incident we may quote Dr. Stewart's own words in the course of his reply, "I have long ago learned that people who differ on many points could yet walk hand in hand towards the eternal goal". Another very pleasing feature of the evening was the presentation to Dr. Stewart with a basket of roses from the Nursing Sisters of the Dalhousie Hospital Unit, which contained a rose for every year of their Colonel's professional career. W. H. H.

XUM

THE ADDRESS

The address presented to Dr. Stewart read as follows:

"JOHN STEWART, C.B.E., M.B., LL.D.,
F.R.C.S. (Edin.)

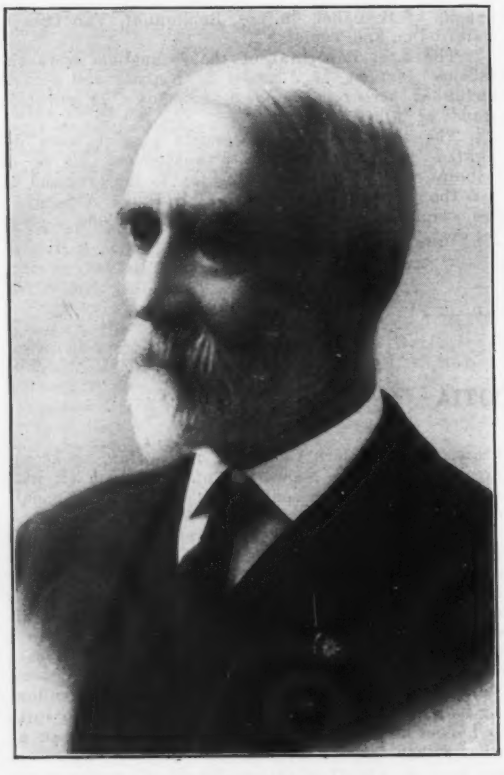
Dean of the Faculty of Medicine,

Dalhousie University,

Halifax, Nova Scotia

"Fifty years ago you received your degree in Medicine from the world famous Medical School of Edinburgh, and since so few of our profession reach the fiftieth anniversary of their graduation, it is a cause for gratification when one survives so long the trials and difficulties of life. But in your case, sir, it is doubly gratifying, since from the beginning you have been a great leader among us.

At Edinburgh it was your privilege to be a student and close associate of the great Lister, and to-day you are one of the few remaining of those who went forth from his classes to spread the light of his evangel in the dark places of human suffering. Though larger



DR. JOHN STEWART

and more attractive fields were open to a surgeon of your training and ability, you chose to give the benefit of your knowledge to your native province. Since your return, Nova Scotia has made splendid advances, especially in surgery, and we sincerely believe that your work and teaching, more than any other single factor, have brought about results so beneficial to the welfare of our people.

Not only have your skill and knowledge raised the standards of medical and surgical practice in this province, but your high sense of professional honour and your exalted ideal of professional conduct have been an inspiration to all who came under your influence. The gifts which Providence bestowed on you abundantly and which were improved by continual study and the wisdom gained by long and varied experience, you have held as a sacred trust for the benefit of your fellowmen. Selfishness has found no place in your life. Neither desire for material gain nor professional jealousy has ever cast suspicion on the probity of your conduct. You have not chosen to keep your knowledge from others, lest any should claim a share of your glory, but have been eager to impart to all. You have held up to us constantly your own high ideals of the physician's calling as a consecrated service of suffering humanity.

We recall with pride the splendid patriotism which inspired you, already a man who reached the age where the right to seek ease has been earned, to forsake the congenial path to which your feet had been so long accustomed, and go forth to serve your country in the Great War. As Dean of the Dalhousie Medical Faculty you thought it your place to lead the Hospital Unit the University was sending to the front. With that high sense of duty that is part of your Scottish heritage, you made sacrifices from which lesser men would have shrunk.

Though you have not sought honors, they have come to you, as happily they sometimes do to those who seek them least and deserve them most. His Majesty the King, paid you high honor for the services you rendered your Country. Your old University, Edinburgh, has been proud to single you out among her sons. Only this year, in connection with the Lister Centenary, in which you were called upon to play a distinguished part, the Royal College of Surgeons of Edinburgh, gave you its highest award.

But we like to think that perhaps dearer than all these is the sentiment of mingled affection and respect with which the members of the medical profession of this province regard you. We are here to-night to give public expression to that sentiment, and to convey to you our great gratitude for the example you have been to us through fifty long years, and for the prestige you have lent to the profession of which it is our privilege to be members.

In testimony of our feelings towards you, allow us to offer you something more material than weak words, and the hope that you may remain with us many years, the glory and ornament of our profession in this province. May the evening of your life be made brighter and happier by the knowledge that you possess in the fullest degree that love, respect and gratitude which your unselfish devotion and noble service so richly deserve.

Signed on behalf of your confrères in Nova Scotia:
Hon. Secretary-Treasurer—W. L. Muir.
Committee—E. V. Hogan, M. T. Sullivan, Geo. T. Farish."

Dr. John Stewart, Dean of Medicine, Dalhousie University, returned from an extended visit to the old land on the last day of September and left a week later for Baltimore to address the Medical Society of Johns Hopkins University on the occasion of its commemoration of the centenary of Lord Lister's birth.

The Halifax Branch of the Medical Society of Nova Scotia will begin the session on the twelfth of October, when the members will meet for dinner at the Ashburn Golf Club and the president, Dr. G. H. Murphy, will deliver his presidential address. A good programme has been arranged for the winter, and an unusually successful session is anticipated.

The Pictou County Branch of the Medical Society of Nova Scotia held its annual meeting at Pictou on September 15th, when new officers were elected as

follows: President, Dr. M. R. Young, Pictou; Vice-President, Dr. H. H. MacKay, New Glasgow; Secretary, Dr. John Bell, New Glasgow. Dr. J. A. Dunn, Pictou and S. G. MacKenzie, Westville, were appointed to represent the branch on the executive of the provincial society.

The vital statistics of Nova Scotia for the month of May indicate that there were 952 births and 529 deaths during the month. Compared with May, 1926, there was a marked decrease in the number of deaths from pneumonia, tuberculosis and influenza, and a total reduction of 76 in the number of deaths from the commoner communicable diseases. The infant mortality rate was 78.7; in May 1926 it was 89.3.

Announcement is made that the American College of Surgeons has listed the following hospitals as fully approved: Highland View Hospital, Amherst, St. Martha's Hospital, Antigonish, the Glace Bay General and St. Joseph's Hospitals, Glace Bay, the Children's, Grace Maternity and Victoria General Hospitals and the Halifax Infirmary, Halifax, the City of Sydney Hospital, and the Yarmouth Hospital. The Aberdeen Hospital, New Glasgow, has been conditioned. Those who know the history of the Aberdeen Hospital and the splendid work which it is doing under the discouragement of very acute financial depression throughout its constituency, will unite in the hope that it may soon be able to remove the minor deficiencies which prevent its listing with the fully approved hospitals.

The refresher course for physicians, which was carried on under the auspices of the Dalhousie Faculty of Medicine, for five days in the month of September, proved very successful, and was attended by a large number of practitioners from the Maritime Provinces and Newfoundland, as well as a number from farther fields. An enjoyable feature was a luncheon given by the University at Shirreff Hall to those who had registered for the course, which was attended by more than sixty medical men. The lectures given by Drs. Austin, of Queen's, Powell, of McGill, Randolph, of George Washington University, and Rudolf, of Toronto, were greatly enjoyed. The presence of the representatives of Canadian schools was made possible by the kind co-operation of the Canadian Medical Association.

It is officially notified that Dr. Clyde S. Marshall has been appointed provincial psychiatrist by the Nova Scotia Government. Dr. Marshall graduated at Dalhousie in 1924, and after a year at general practice accepted a fellowship at the disposal of the Canadian National Committee for Mental Hygiene under which he has spent two years at special study of neurology and psychiatry. He now returns to Halifax to organize a plan of work outlined in the recommendations made to the government by a commission which was appointed to investigate the provincial situation in respect of the care of the feeble minded. This includes the establishment of more special classes in the schools, psychiatric clinics, and an institution for cases which cannot be properly cared for elsewhere.

In Glace Bay and its neighborhood, recently, an unusual prevalence of infantile diarrhœa with a high mortality rate caused much concern. Public interest was aroused, and much criticism indulged in. A large proportion of the people in this part of the province live in "Company" houses—that is, houses owned by the Dominion Coal Company—many of which lack conveniences which are important to health. The Company maintains that it is impracticable to build sewers in many areas because of the frequency with which the ground overlying mine-workings falls in. For the same reason, permanent water mains are not laid in such areas, although surface pipes are used except in the frosty months. The out-door privy and the "dug" well are therefore, much in evidence, and exceptional opportunities are offered for the spread of infection of the alimentary tract. Despite the acknowledged difficulties, it is the opinion of medical men that conditions could be greatly improved. In the emergency, the Provincial Department of Health made an investigation and placed a number of public health nurses in the field. It is expected that the representations of the provincial authorities will lead to substantial sanitary improvements, and that the instruction given relative to preventive measures in the home will have a beneficial effect.

Dr. S. A. Morton, of Halifax, has gone to the Mayo Clinic, where he has been awarded a fellowship.

Dr. J. P. McGrath, of Kentville, left in September for a prolonged period of graduate study in England and on the Continent.

Dr. A. J. Walker, of the Venezuela Gulf Hospital, recently spent several weeks at Halifax visiting his parents, Dr. and Mrs. Smith L. Walker.

Drs. J. L. Cock, of Halifax ,and J. A. Grant, of Lockeport, have been appointed to the overseas staff of medical inspectors of immigrants of the Federal Department of Health.

Drs. K. A. MacKenzie and G. H. Murphy, of Halifax, have been selected as the representatives of the medical profession on the board of examiners of the Registered Nurses Association of Nova Scotia.

Graduating exercises were held at the Ross Hospital, Sydney, on the thirtieth of September, when diplomas were awarded to several nurses on the completion of their course in training. The address to the graduates was delivered by Dr. J. G. B. Lynch.

While in Halifax to take part in the Dalhousie Refresher Course, Dr. L. J. Austin, of Queen's University, addressed the Halifax Rotary Club on "Quacks and Quackery." He spoke most entertainingly of past and present quack methods, both within and without the profession, and emphasized the dangers of resort to patent medicine. W. H. HATTIE

NEW BRUNSWICK

On October 15th, Dr. L. DeV. Chipman, of Saint John, assisted by Dr. R. H. Morrisey of Newcastle, operated upon a large group of nose and throat cases, sixty-four in number, at Rogerville. These surgical clinics, in more or less isolated centres in the province, have done a great deal of good, and the excellent results are much appreciated by the physicians who do school inspection. These children all show improvement in health and in their studies subsequent to this very necessary surgical treatment.

XUM

Dr. V. D. Davidson, Dr. A. E. Macaulay, and Dr. D. C. Malcolm of Saint John have returned from a three months' course of clinics in Great Britain and on the continent. Their comments on the course of surgery in Edinburgh were most complimentary.

Dr. George Acheson of St. Martins has returned home from a very enjoyable holiday spent in Ontario.

Dr. and Mrs. D. H. McAllister of Sussex, N.B., are at present in Montreal, where Dr. McAllister is undergoing treatment. We hope for early news of improvement in the Doctor's health.

Dr. W. D. Rankine of Woodstock has been elected President of the Woodstock Golf and Country Club.

Dr. G. A. B. Addy of Saint John has been honoured by the American College of Surgeons in his appointment to the Board of Regents of that organization. Dr. Addy is at present attending the interstate post-graduate meeting at Kansas City.

At Moncton on October 2nd, his Lordship, Bishop E. A. LeBlanc, of the Diocese of Saint John, officiated at the ceremony of blessing the corner-stone of the new Hôtel Dieu Hospital at Moncton which is being erected by the Sisters of Providence.

At Fairhaven, Deer Island, N.B., a group of nose and throat cases, reported by the School Medical Inspector, Dr. A. C. King, were operated upon on October 2nd. The surgeons were Dr. L. DeV. Chipman and his assistant, Dr. Alex. Murray.

Dr. E. Flahiff of Paris, Ontario, has been appointed to succeed Dr. C. W. McMillan at the Saint John County Hospital.

A recent visitor to New Brunswick was Dr. Peter Heinbecker, who is a member of the Putman Baffin Island expedition to the far north. Dr. Heinbecker was a guest of Dr. H. A. Farris while in Saint John.

Dr. and Mrs. L. G. Pinault of Campbellton have returned from a trip to the Southern States and Mexico.

Dr. C. W. McMillan has been appointed by the Provincial Department of Health as travelling tuberculosis diagnostician for the western section of the province. This appointment is to fill the vacancy created by the death of Dr. G. C. McLean.

The post-graduate extra-mural lecturers in September were: Dr. A. T. Henderson from Montreal, who spoke on the "Problem of the Asthmatic", and Dr. F. E. McKenty also of Montreal, whose subjects for discussion included gall-bladder lesions as well as appendicitis. These two gentlemen appeared at Woodstock, Fredericton, Saint John, Moncton, and Chatham. Dr. Henderson's paper was exceedingly well spoken of, and though Dr. McKenty covered a hackneyed subject, it was presented in a somewhat novel manner.

A. STANLEY KIRKLAND

QUEBEC

Some 400 doctors from different sections of the province attended the third annual meeting of the Province of Quebec Medical Association. The programme included a series of clinics at the various hospitals in the city, followed by a dinner in the evening at the Mount Royal Hotel, at which numerous addresses were given. The medical staff of the University of Montreal gave an excellent series of clinics at the Sacred Heart Hospital at Cartierville during the morning; in the afternoon, members of the McGill medical staff demonstrated special cases at the Montreal General Hospital. Tuberculosis occupied the attention of the experts during a portion of the meeting. Emphasis was laid on the early treatment of the disease before its ravages had gripped the victim too strongly.

Definite information has been received by the Faculty of Medicine at McGill that the magnificent Osler Memorial Library, which has a unique historical value, will arrive in Montreal in the spring and will be placed in the special room allotted to it in the Medical Building. A valuable addition has been recently made to the library by Dr. Casey A. Wood, who has secured many of the works of the old master-minds in medicine of the far east during the past centuries. Many of the volumes are illustrated. These, it was stated, will fill some of the few lacunæ needed to make the library historically almost complete. A bronze relief of Sir William Osler, by Vernon, is being completed, and will occupy a niche in the room devoted to this library.

Word has also been received by the Faculty that a portrait of the late Professor J. G. Adami, who was at one time professor of pathology at McGill, is on its way here, and will be placed on its arrival in the assembly hall of the medical building. The painting, which is the work of William Penn, of Liverpool, England, is the gift of some of the intimate friends of Dr. Adami to McGill University. Dr. Adami left McGill to participate in the activities of the war and after it was over was offered and accepted the appointment of vice-chancellor of the University of Liverpool, holding that position up to the time of his death.

A number of valuable prints have been reported to the Faculty among them presentations from the Royal Society of Medicine of London and from Dr. R. W. Powell, Dr. J. Moores Ball of St. Louis, Dr. F. J. Shepherd and others.

Inauguration of a ten weeks' course of study of the pre-school child, under the Department of Child Welfare at McGill University took place at the Nursery School on University Street, under the supervision of the University. The course will consist of 20 hours of lectures and 40 hours of observation work. It is open to all people interested in children. Dr. Chandler will deliver an introductory lecture on the history and aim of the child-study movement. The course will include lectures on the physical care of the child, and will cover the subjects of heredity, growth, nutrition, physical habits, and prevention of disease.

The winners of the four new scholarships offered to the entrants of the Medical Faculty at McGill have just been announced. These scholarships have an annual value of four hundred dollars and are tenable for five years. They were provided through the instrumentality of Dean Martin. Several people have been interested in the question of providing financial assistance for those students who desired to continue

their studies in medicine but were unable to do so because of the lack of money. These students, it was then thought, would either have to go to a smaller college or forego medical training altogether. For such students, who have been adjudged to be in need of financial assistance and who have made a good record in their studies, these scholarships running for the entire period of the five medical terms have been made possible by Mrs. R. MacDougall, Mrs. R. M. Paterson, Mrs. Charles Meredith, Mrs. C. F. Martin, and Louis Colwell. An effort is being made to secure sufficient funds to permit scholarships of a similar amount being offered at the commencement of each year to incoming students who desire to prosecute their studies but have not the means to do so.

A physical examination of all the students entering the University, as required by a university regulation, has been carried out. The ruling came into effect some years ago and has ever since been strenuously enforced; students who do not present themselves for examination are excluded from the classes. The students are grouped by the university medical officer, Dr. F. W. Harvey, as either fit for all forms of exercise, for a limited number of forms, for gymnasium work only, or for remedial gymnastics, temporarily unfit, or permanently unfit for any forms of physical exercise.

With the opening of the medical school, the official inauguration of the new department of Public Health and Preventive Medicine took place, with Dr. A. Grant Fleming as director. The various facilities to be offered in the department of industrial hygiene and in other aspects of preventive medicine are now being arranged, and definite work is expected to commence at once.

The immigration hospital, located in Savard Park, is to be enlarged by the construction of a three-storey wing, work on which will be started in the spring. This new section will contain, in addition to 75 beds, two large recreation halls, which will be on the same floors as the bedrooms and will permit patients to amuse themselves without disturbing others, as they will form separate compartments. Construction work is expected to be finished by the end of next fall, so that the new building should be ready for occupancy at the opening of the 1929 season of navigation.

Dr. H. S. Birkett, C.B., has been notified of his appointment as honorary member of the American Academy of Ophthalmology, Otology, and Laryngology.

Professor Emile Sergent, of Paris, France, delivered a series of interesting and instructive lectures on respiratory diseases at the University of Montreal. Special clinics were also given at the various hospitals specializing in tuberculosis.

The International President of the Kiwanis Club presented, on behalf of its Montreal branch, a motorbus to St. Justine's Hospital GEORGE HALL

SHRINERS' HOSPITALS FOR CRIPPLED CHILDREN

The Trustees of the Shriners' Hospitals for Crippled Children visited the Montreal Branch on October 4th. It is stated that there are now fifteen Shriners' Hospitals in operation throughout the United States and Canada, and that since the Hospitals first opened in February, 1922, 10,000 patients have passed through the Hospitals with 5,000 much benefited or cured. The Montreal Unit has taken no small part in this splendid result as will be shown from the following statement:—

1. Hospital opened February 18th, 1925
2. Applications since received 428
3. Admitted 358
4. Discharged 328
5. Cured (over 85 per cent) 290

AMERICAN ROENTGEN RAY SOCIETY

The 28th annual meeting of the American Roentgen Ray Society took place at the Mount Royal Hotel, Montreal, from September 20th to 23rd.

There was a registered attendance of 250 members and guests. Among them were Dr. Kaye of the National Physical Laboratory, England, and five other English roentgenologists. The lectures were well attended and papers were delivered by specialists from coast to coast. Advances in the diagnosis of gall bladder disease by refinements in the Graham method were dealt with by Dr. Stewart of New York, and Dr. Skinner of Kansas City. A lesion at the pyloric end of the stomach may interfere with the test's value.

The Caldwell lecture which was established in memory of Eugene Caldwell a pioneer in x-ray work, was delivered by Dr. Kaye. In this lecture he mentioned facts new to the x-ray world. One of these was that a glass prism when used properly will deflect x-rays. The lecture was delivered in the New Moyse Hall of the University in which the lecturer held his audience spell bound for more than an hour and a half.

Forty papers were on the programme, many of them on subjects of interest to every medical man. For those who do not make a practice of systematically studying the literature these lectures are the next best thing for keeping them up to date.

The members were able to combine study and pleasure for though the lectures began at 9.30 and finished at 5 p.m., with an interval for lunch and began again at 8.30 p.m. and continued to 11 or 12 p.m., yet some there were who went golfing; a tournament on the course of the Royal Montreal Golf Club drew twenty-one entrants. A banquet at which Dr. Coolidge (the inventor of the famous Coolidge x-ray tube) was the principal guest drew an attendance of 190 guests, the largest attendance in the history of the Society. A feature at this banquet was the passing of the loving cup, the ancient Scottish custom which began at the Court of Malcolm Canmore, and continues to-day at Scottish gatherings. The presentation to Dr. James Case of a *pergamino* signed by representatives of about a dozen South American States including Cuba was carried out by Dr. Farinas who came from Havana to present it, in recognition of Dr Case's lectures delivered on various occasions in the various states.

An excellent scientific and manufacturers' exhibit occupied the ball room of the Hotel, and overflowed to the passages outside. Mr. Judah who managed this exhibit did so in his usual efficient and artistic manner, and he had worthy material to work with. The Royal Victoria Hospital had an afternoon tea for the members, and the ladies of the Society were entertained at Dorval by Mrs. J. W. McConnell and at Baie D'Urfee by Mrs. A. H. Pirie. A smoking concert to which the medical teaching faculty of McGill and the Medico-Chirurgical Society were invited finished up a programme in which every minute of the four days was filled whether by interesting scientific papers or by features for enjoyment and relaxation.

Dr. Edward H. Skinner, Kansas City, was chosen as the President-Elect, and Dr. John T. Murphy, 421 Michigan Ave., Toledo, Ohio, was appointed Secretary.

A. H. PIRIE

ONTARIO

With October began the activities at the Academy of Medicine, and, owing to the fact that there were many visitors in Toronto this year in attendance upon the centenary exercises, special efforts were made to provide both entertainment and instruction. The programme began with the annual dinner on Tuesday, October 4th, at Osler Hall, which was crowded to the doors to hear Sir William Mulock and the Hon. W. H. Price, Attorney General of Ontario, and to listen to the inaugural address of the President, Dr. J. H. McConnell. Dr. McConnell took for his subject "The Relation of the Profession to the Public", and his views, stated forcibly, were received with much approbation.

The centenary celebrations of the University of Toronto occupied the greater part of the week beginning with October 4th, and though the Medical Faculty can make no claims to one hundred years of continuous existence, nevertheless it had close interests in the University itself and in the distinguished visitors who came from many quarters as the representatives of other universities, or as candidates for the honorary degrees. Amongst the more notable of the visitors were Sir John Bland-Sutton, ex-president of the Royal College of Surgeons, Sir John Broadbent, Sir Charles Sherrington, Professor W. G. McCallum of Johns Hopkins, and Professor Thomas McCrae of Jefferson, Philadelphia. It was hoped that Dr. Harvey Cushing would also be present, but circumstances prevented his taking part in the proceedings. Addresses on general subjects were given by several of the visitors, Dr. McCallum spoke on the subject of the "Internal Secretion of the Ovary", and described the work being done in that connection at Johns Hopkins. Sir John Bland-Sutton's address on "Food and Physics" was considered both interesting and amusing by his large audience. The honorary degree D.Sc. was bestowed upon two of our best known Canadians, Professor W. G. McCallum and Dr. Thomas McCrae. Dr. McCallum was a graduate in the Faculty of Arts and of Science of Toronto before he took his medical degree at Johns Hopkins Hospital and Dr. McCrae is a graduate of Toronto in both Arts and Medicine.

The Medical Alumni of the province and city were represented at the various performances by Dr. Robert T. Noble, President of the Association and the officers of the Association. In the parade representing the various activities of the University was seen a cleverly constructed medical float.

At the special service for the dedication of the bells in the soldiers' tower, which took place on Thursday, October 7th, both the Medical Alumni and the Academy of Medicine were represented by deputation. One of the bells in the chimes was contributed by the Academy in memory of the medical men of the University and Academy who fell in the war. It is much to be regretted that the history of the Medical Faculty at the University has been of such an interrupted character, otherwise it too might have taken an active part in this centenary celebration. The history of the abolition of the old University of Toronto Medical School is perhaps too well known to be told again, but it must always be considered deplorable that the Medical School founded on such good principles in the year 1838 was so soon abolished.

As early as 1828 the possibility of a Medical Faculty was debated and in 1837 when the general plan of the University was laid before the Chancellor, education in the medical sciences was provided for—chemistry, anatomy, physiology, the theory and practice of physic, the principles and practice of surgery, materia medica, therapeutics and botany, midwifery and diseases of women and children, were to be taught.

It is interesting now to notice that the lecturers in anatomy, medicine, surgery and materia medica were to receive salaries of £200: this sum in those days must be looked on as a remarkably good remuneration, placing the recipients practically on the same plane as the college professor.

The school was well established by 1843; then came the Hincks' bill of 1853 and with it the disappearance of the School of Medicine as part of the University. It was not till after thirty-two years had passed that the Faculty was re-organized, so that the present medical school of the University of Toronto has only had continuous existence for forty years.

On the afternoon of September 28th, Mr. Wright, of Manchester-Salford, met the Fellows of the Academy and addressed them on the subject of "Jejunal Ulcers."

In addition to the general programme for October, there is now always to be remembered the annual St. Luke's day service. This year this took place on October 16th, in Osler Hall, the service being conducted by the Rev. Stuart Parker.

The position of Superintendent of the Government Hospital at Orillia, long vacant, has been filled by the appointment of Dr. B. T. McGhie, formerly Superintendent at the Westminster Hospital, London.

The annual meeting of District Number Six was held in Peterborough on September 8, 1927. About 75 members were in attendance, and papers were read at both meetings, which were held at St. Joseph's Hospital at 10 a.m. and 2 p.m. During luncheon at the Empress Hotel, the doctors were first welcomed by Mayor Holloway, and then briefly addressed by Dr. Weston Krupp and Dr. T. C. Routley, President and Secretary of the Ontario Medical Association. Dr. Krupp spoke especially of the necessity for a certain amount of publicity for the medical profession, in view of the increasing claims of certain cults, and their methods of keeping before the public. Dr. Routley reviewed the progress made by the Association during the last nine years. After the meetings a garden party was held at Nicholls Hospital, and the golf links were open to those who desired to play. The following programme was given:—

Obstruction of the small intestine, acute and chronic.
Dr. Jas. T. Case, Battle Creek.

The medical treatment of peptic ulcer.
Dr. John Phillips, Cleveland.

The management of some obstetrical difficulties.
Dr. W. P. Tew, Western Hospital, London.

Some practical points in the practice of pædiatrics.
Dr. Tisdall, Hospital for Sick Children, Toronto.

The significance of symptoms in diseases of the circulation.
Dr. J. W. Meakins, Royal Victoria Hospital, Montreal.

During the day, an invitation was extended for the next annual meeting to be held in Belleville. Dr. Neal of Peterborough, and Dr. Stobie of Belleville, were re-elected Counsellor and Vice-Counsellor of the District.

Dr. Weston Krupp, President of the Ontario Medical Association, is attending the annual meeting of District Number 10, in Port Arthur and Fort William, on September 23rd.

Dr. Thomas D. Cumberland, late of Kingston, has been appointed Medical Superintendent of the Ontario Hospital at Woodstock, in place of Dr. J. J. Williams who goes to the Ontario Hospital at Hamilton.

H. V. Dobson, who has been a fellow in the Mayo Foundation and attached to the staff of the Mayo Clinic, Rochester, for the past four years, has recently joined the staff of the Medical and Surgical Clinic, Peterborough. During this period, which was devoted to internal medicine, Dr. Dobson did some investigation and special clinical work in gastroenterology.

N. B. GWYN

Regret is being expressed on all sides that the Western University is losing Dean McKibben, who goes to the University of Michigan as associate Professor of Anatomy. Dean McKibben has been responsible in a large measure for the marked advancement that this university has made during the last decade.

Dr. A. Bruce Macallum has been chosen by the Board of Governors as Dean of the Medical School to succeed Dean McKibben. Dean Macallum is a nephew of the late Dr. Hugh A. McCallum, '86 and son of Professor A. B. Macallum of McGill University. He came to the Western in 1923 as Professor and Chief of the Department of Biochemistry.

Professor G. Ramon of the Pasteur Institute, Paris, is at present a guest research worker in the Connaught Laboratories, University of Toronto.

MANITOBA

THE SEMI-CENTENNIAL OF MANITOBA UNIVERSITY

The jubilee of the University of Manitoba was fittingly celebrated on October 6th, 7th, and 8th. A large number of graduates from outside points joined with Winnipeg graduates and the undergraduates in paying homage to their Alma Mater.

On Thursday evening re-union dinners were held at the various colleges, and later a joint meeting was held in Grace Church, where tributes were paid to those who had wisely and well laid the foundation stones of the University, notably Archbishop Machray, Archbishop Taché, Principal King, Principal Sparling, and Dr. J. W. Good for many years Dean of the Medical School.

On Friday morning, a convocation was held in the Walker Theatre. President Murray of Saskatchewan University extended greetings from the sister province and gave an eloquent address. Ten men who have done much to the upbuilding of the Canadian west received the degree of LL.D., *honoris causâ*. Among the ten were two medical men: Dr. E. W. Montgomery, who was presented by Dean Prowse, and Dr. D. A. Stewart, presented by Prof. F. W. Clark. As the latter remarked it was only the accident of the initial letter of their names being far on in the alphabet that caused them to come last on the list. Both have indeed been benefactors of their province, and the university honours itself in honouring them.

In the evening a very successful dinner at the Agricultural College was given by the University Alumni, at which Premier Jas. G. Gardiner of Saskatchewan, himself a graduate of Manitoba, B.A., 1911, LL.D., 1927, gave an inspiring address.

Saturday afternoon saw graduates and undergraduates of widely separated years mingling at the Wesley football field. Old time teams from Medical, Wesley, Manitoba and St. John's met in conflict under the soccer code, and then the University Rugby team opposed the Old Boys. Among the medical men figuring in the games were Drs. V. G. Williams, Schwalm, W. W. Musgrove, Leishman, Frank McKinnon, Ross Mitchell, J. R. Davidson, R. N. Burns, Harvey, Adamson, Warner, Washington, Mann, Fred. Abbot, Lynn Falconer, and Rogers. In the evening the Alumni Athletic Directorate tendered a dinner to members of the teams at the Marlborough Hotel and the Students' Union held a dance at the Royal Alexandra.

A very successful meeting of the North West Medical Association was held at Miniota, on September 6th. Dr. Herbert Bell of Winnipeg spoke on "Ophthalmology from the general practitioner's standpoint," and gave practical illustrations of his remarks. Clinical cases were presented by Drs. Chalmers and O'Brien. Dr. E. S. Moorehead of Winnipeg spoke on "The commoner causes of abdominal pain, their differential diagnosis and medical treatment." Dr. T. Shaw of Russell was elected president; Dr. M. C. O'Brien of Birtle, Secretary-Treasurer; and Dr. Geo. Clingan of Virden, Representative on the B. M. A. Committee. After the meeting the ladies of Miniota served an excellent supper.

Preparations are being made for meetings in the near future at various centres in Manitoba under the extra-mural post-graduate scheme.

Prior to his departure for Edinburgh, where he will be Senior Lecturer in Zoology, Prof. C. H. O'Donoghue was tendered complimentary dinners by the Scientific Club of Winnipeg and the Natural History Society, in both of which he had been a valuable and zealous worker.

Dr. D. A. Stewart and his associates from Ninette Sanatorium recently held a tuberculosis clinic at Emerson and Vita in the south-eastern angle of the province.

Dr. Alex. J. Swan has recently returned from Scotland and will engage in practice on diseases of the eye, ear, nose, and throat.

Dr. Tudor Jones, Assistant Professor of Anatomy, has been called away by the illness of his father. He will be succeeded by Dr. Donald Mainland, a graduate of Edinburgh University, who will arrive in Winnipeg at the end of November.

St. Joseph's Hospital is opening on Out-Patient Department, commencing Monday, October 2nd. Clinics, medical, surgical and special, will be held each morning, from 10-12 a.m. Clinical luncheons will be held at the hospital on the last Tuesday of each month.

Dr. J. D. Adamson has been appointed Honorary Secretary of the British Medical Association Committee of the Manitoba Medical Association, of which committee Dr. Harvey Smith is President.

Hon. Dr. E. W. Montgomery, the newly appointed Minister of Health, will visit points in eastern Canada and the United States to investigate the working out of public health problems.

Dr. Geo. Stephens, Superintendent of the Winnipeg General Hospital, attended the meeting of the American Hospital Association at Minneapolis.

XUM

Dr. Geo. V. Bedford of Winnipeg read a paper on "Eczema" before the Saskatchewan Association at Moose Jaw on September 21st.

On September 29th Dr. Neil John Maclean of Winnipeg gave an address to the Minneapolis Surgical Society and the Hennepin County Medical Society on "Intra-thoracic goitre with a report of seven cases in a series of 500 goitre operations."

Dr. Bruce Chown has been declared the winner of the Winnipeg Medical Society's prize for the best medical essay, his subject being "Pyelitis in infancy, a pathological study."

At the meeting of the Winnipeg Medical Society in September, Dr. J. D. Adamson read a paper on "The liver treatment in pernicious anæmia"; and Dr. A. Gibson, one on "Palæo-pathology," illustrated with slide and dried specimens. At the meeting on October 14th, Dr. Paul O'Leary, of the Mayo Clinic, spoke on "Neurosyphilis," and Dr. A. A. Murray on "Medical and social problems of crippled children."

At a recent meeting of the Executive Committee of the Manitoba Medical Association, a committee was appointed to investigate maternal and neo-natal mortality in Manitoba and to report at the next annual meeting of the Association.

ROSS MITCHELL

SASKATCHEWAN

Dr. A. K. Wilson, L.M.C.C., graduate of Toronto, 1926, has begun practice at Milestone, Sask.

Dr. H. H. Finlay, who for the past two years has been practicing at Kenaston, has taken over the practice vacated by Dr. S. H. McLeod at Langham.

The past week was a tragic one in medical circles in this province, since three members of the association, Drs. Brown, Taylor, and McCartney lost their lives.

On September 29th, in the afternoon or early evening, the dirty, weedy waters of the southern end of Pelican Lake claimed two lives, those of Dr. Oscar Taylor of Mortlach, and Dr. T. G. McCartney of Estevan. The bodies were found in about four feet of water and about ten feet apart, only a short distance from where their boat floated right side up on the surface of the lake. The doctors were out on a shooting trip when this most unfortunate tragedy occurred. Dr. Taylor was a graduate of Toronto University, 1923, and Dr. McCartney a graduate of the same University in 1925.

On Monday afternoon, October 3rd, while sitting in his office, Dr. Wm. W. Brown of Moose Jaw was shot to death. Alex. Oshuk, alias Onufry Osadchuk, an Austrian, who fancied he had a grievance against the doctor is charged with the crime. It is alleged that he entered Dr. Brown's office, and with the dramatic words "I have come to square things with you", aimed a 38 calibre revolver at Dr. Brown, pulled the trigger, and shot him through the heart. Oshuk left the office where the dead body of the doctor lay, and made his way to the Woolworth Building, in which are located the offices of O. R. Regan, barrister, against whom it is supposed he held a grievance. The man entered the office, and said that he had shot Dr. Brown, and drew his revolver and levelled it at the barrister. Instinctively, Mr. Regan dropped to the floor thinking that the trigger was about to be pulled. His wife, who was in the office at the moment, stood up and said that he would have to shoot her first. Before Mrs. Regan's look the man wilted. "I cannot shoot you, Mrs. Regan" he said, lowering his revolver, which he then placed on the desk and emptied the cartridges. Not only the medical fraternity but the whole community has been shocked by this tragedy.

Dr. Brown served with the medical forces overseas during the late war. An associate of his has paid the following tribute:—

"He was a thorough and efficient officer in the field, and, coupled with a strong sense of discipline, he had a kindly disposition towards everyone in pain or suffering. His great claim to affection in all ranks in the battalion was the wonderful way he attended the sick and wounded under all circumstances. Never would he leave the field hospital, no matter how long he had been on duty, until he had seen everyone of the sick or wounded cleared away to the back trenches by the field ambulance."

ALBERTA

The question of rural hospitals in this province has for many years been an insistent one, and undoubtedly more of such institutions are required, but it will be a number of years before the needs of many districts will be fulfilled in this respect. There is no doubt that in such hospitals many of the requirements for careful medical and surgical attention can be given, and they fill a long felt want in the community besides giving an inestimable amount of service. It has been found, however, that with all the advantages of a municipal hospital in a town, physicians in adjacent areas are not content to remain where there are no hospital facilities. As a result some towns have been left without a physician. A partial solution of this problem would be to have small sub-hospitals, or lying-in hospitals, in the smaller towns adjacent to a municipal hospital, where there is a physician. This has already been done in a few instances, and has worked out fairly well. There are far-flung areas in this province, with scattered settlements, where for many years to come, it will be difficult to obtain adequate medical care, even though the Government defray the cost of securing physicians in an endeavour to meet these needs.

The extensive outbreak of infantile paralysis in this province, which developed in the latter part of August, reached its peak about the third week in September. The greater number of cases occurred in Edmonton and the contiguous districts, reaching a total of about one hundred. There were about seventy-five cases in various other centres. Calgary had a total of nine. Strict measures of quarantine were put into effect and all schools were closed wherever the disease broke out. During the second week of October, the schools were re-opened, since the danger seemed

to be past. The mortality rate for the recent epidemic is said to have been fairly high. One feature of the disease was the intensity of the pain, which persisted for several days, and for which drugs afforded almost no relief.

Dr. A. T. Chisholm, of Sangudo, has accepted a mine contract at Evansburg, Alberta, succeeding Dr. A. L. Caldwell, who is at Cabri, Saskatchewan.

We are pleased to learn that Dr. J. S. McEachern of Calgary, who has been ill for several months, has so far recovered that he was able to return home from hospital. He will leave for the coast shortly, to further recuperate his health.

The Municipal Hospitals By-law, recently voted on at Stettler, failed to carry the two-thirds majority necessary, much to the disappointment of many people.

Dr. W. Weston Upton of Calgary, has returned from a post-graduate visit to Rochester, Minnesota, and Chicago hospitals.

Dr. J. W, Richardson of Calgary, has returned from New York, where he spent some time in post-graduate work. He attended the Congress of the American College of Surgeons in Detroit.

Dr. R. H. L. O'Callaghan of Calgary, will limit his practice in future to surgery.

Dr. Robert Allan, of Coronation, has disposed of his property and practice to Dr. S. H. Macleod of Lashburn, Saskatchewan, and has returned to Calgary, where he practised twelve years ago.

Dr. C. D. McBride of Vancouver, is now practising at Hardisty, Alberta. He has been appointed surgeon for the Canadian Pacific Railway at this sub-divisional point.

Dr. G. H. L. Armstrong, formerly of Islay, has taken over the practice of Dr. A. W. Bowles of Gleichern, who intends spending the next two years in post-graduate surgical work in England.

Dr. Nicholas Strilchuk, a graduate of Alberta University, is now practising at Mundare.

Dr. Edith Hamilton, of Hemaruka, Alberta, has been appointed demonstrator of anatomy in the University of Alberta. She graduated in 1926 from this university.

G. E. LEARMONTH

BRITISH COLUMBIA

Dr. J. G. McKay of Vancouver, addressed the Victoria Medical Society at the May meeting on "Some studies of paranoidal states".

On May 19th, the consulting staff of St. Joseph's Hospital presented the programme for the clinical meeting of the Victoria Medical Society. Dr. John H. Moore, Pathologist of St. Joseph's Hospital, showed many interesting microscopic slides on the Enoscope which the hospital provided for such demonstrations. The thanks of the Society is due the St. Joseph's Hospital management and consulting staff for a very excellent and instructive evening.

At the June meeting of the Victoria Medical Society an interesting paper on "The poor surgical risk" was presented by Dr. C. E. Brown of Vancouver, from the internists' viewpoint. Dr. Shinbein, President of the Vancouver Medical Association, afterwards dealing with the surgical aspect.

At this meeting the Victoria Medical Society was the recipient of a presidential chair, of Jacobean style, the gift of Dr. Forrest Leeder, the Chairman of the Library Committee. This chair is to bear the names of those who have occupied it and will be a record of the Presidential history of the Society. The Society's thanks were passed to Dr. Leeder for this addition to the furniture of the Medical Library rooms.

On August 24th, the members of the Victoria Medical Society were the guests of Dr. Chester P. Brown and Mrs. Brown of the Dominion Quarantine Station at Williams Head. Tea was served at the home of Dr. Brown, and another pleasing feature of the day was the trip from Victoria on the government boat, and later a visit to Bentinck Island where the leper colony is located.

The members of the Victoria Medical Society were the guests of the British Columbia Electric Railway Company on July 27th, when they were conveyed by automobile to the Jordan River plant, forty miles distant, and after lunch inspected its wonders, the party being carried on a miniature railway system for five miles to the upper dams.

Dr. H. E. Ridewood, President of the British Columbia Medical Association and member of the Council of the Canadian Medical Association, reported the transactions of the Council during the recent meeting in Toronto. Dr. Ridewood also detailed the work of the various committees of the Canadian Medical Association and related some of the clinical facts brought forward during the several meetings, for which he was warmly thanked.

The Victoria and Vancouver Island members of the Canadian Medical Association were pleased to have as their guests Dr. A. Primrose and Dr. Duncan Graham of Toronto University, and Dr. W. B. Burnett of Vancouver, on September 9th, who addressed the members at a dinner at the Empress Hotel and later at a meeting held in the library rooms, at which Dr. Graham lectured on the "Anæmias", and Dr. Primrose on "Tumours of the breast". Dr. W. B. Burnett accompanied the Toronto speakers and spoke on the subject of "Pelvic disease in women".

At the annual meeting of the Victoria Medical Society held October 3, 1927, the guest and speaker was Dr. J. W. Arbuckle of Vancouver, who spoke on the "Treatment of eclampsia". An interesting discussion followed this instructive address.

The Annual Report showed the Society's financial condition to be strong and the members were pleased to find that they possessed increasing assets in the library and bank account. The election of officers resulted as follows: President, Dr. M. W. Thomas; Vice-President, Dr. R. L. Miller; Honorary secretary-Treasurer, Dr. S. G. Kenning; the Library Committee to consist of the Executive, Dr. Forrest Leeder, Dr. George Hall, and Dr. Gordon C. Kenning. Dr. H. E. Ridewood was appointed Treasurer of the Library Fund. Dr. Thomas McPherson was chosen as repre-

XUM

sentative of the Society on the Executive of the British Columbia Medical Association. The Retiring President, Dr. Thomas McPherson, and Secretary-Treasurer, Dr. R. L. Miller, were thanked for their excellent year of service.

The third extra-mural post-graduate tour throughout British Columbia has just been completed and it will be interesting to the Canadian Medical Association and the Sun Life Assurance Company to know that it was an unqualified success.

Lectures were given at Fernie, Trail, Vernon, Vancouver, New Westminster, Victoria, Nanaimo, Prince Rupert, and Prince George. Outside the larger centres of Vancouver and Victoria tremendous mileage was covered by the doctors in their anxiety to attend the meetings, and this, plus the enthusiasm and keen appreciation of the addresses, must have been gratifying to the distinguished speakers selected for us.

At several places practically 100 per cent of available men attended, and all absentees gave good reasons for their inability to be present. The record mileage covered was by Dr. C. H. Hankinson of Smithers, who travelled 263 miles each way in order to attend the Prince George meeting. For the East Kootenay meeting Dr. G. B. Henderson of Creston motored 167 miles each way; Dr. F. E. Coy of Invermere, about 150, whilst many other doctors travelled more than 100 miles each way.

A meeting (not included in the itinerary) was held at Powell River, when Dr. Duncan Graham gave two addresses which resulted in probably the most animated discussion of the whole tour. This meeting was unique in that it was the first medical gathering ever held at Powell River, and as the doctors at that place are too far away from any centre to attend meetings their appreciation was manifested in no uncertain way.

One cannot speak too highly of the indefatigable and valuable work done by Dr. A. Primrose, Dr. Duncan Graham, and Dr. W. B. Burnett. It was an honour to have the Dean of the Medical Faculty of the University of Toronto, and also the Professor of Medicine in the same university, with us, and the reception given Dr. Burnett proved the fallacy in this case of the saying "that no man is without honour except in his own country". They were all able and convincing speakers, practical as teachers, untiring in their efforts to impart knowledge of their respective subjects and answer the numerous questions put to them; ever ready to attend the hospitals and give help to the local doctors in difficult cases, holding clinics on the same, and leaving behind a strong feeling that these post-graduate tours fill a long-felt want and a hope that they may be continued.

At each meeting Drs. Primrose and Burnett gave excellent talks on the work of the Canadian Medical Association, the former dwelling at some length on the work of the two Dominion conferences held at Ottawa, on medical services throughout Canada, and both eulogizing in no measured terms the extreme importance and value of Dr. T. C. Routley's work for the profession.

Dr. James Patterson, who has been practising in Vancouver for some years past, has left for the east, and it is understood that he intends to take up practice in New York.

Dr. R. B. Boucher of Vancouver, has left for the east on a short holiday. He expects to visit Chicago and New York and will be away from the city for about a month.

Dr. Stanley Millar has announced his return to the city after post-graduate study in eastern centres. Dr. Millar will, in future, limit his practice to x-ray diagnosis and therapy only.

Dr. W. T. Lockhart has left for the Orient and expects to be away about two months.

Dr. Harold C. White left on September 24th, for Toronto, where he will take up a course of special study in public health work, under a grant from the Rockefeller Foundation. He expects to be away about eight months. During his absence the work of Medical Officer of Schools will be carried on by Dr. Isabel Day and Dr. H. Caple.

Dr. H. H. Boucher of Chilliwack, is assisting Dr. G. L. Campbell of Kelowna during the illness of Dr. W. J. Knox.

Dr. J. M. Jackson has been appointed Medical Officer at Nakusp in place of Dr. M. R. Basted who is at Rossland assisting Dr. W. C. Bissett.

Dr. R. B. Brummitt of Vancouver, has been appointed Medical Officer at Williams' Lake, B.C.

Dr. P. A. C. Cousland is acting as an assistant to Dr. E. L. Garner of Duncan.

Dr. E. A. Coburn left on October 2nd, for a two months' trip to Honolulu as Medical Officer on the Cable ship *Restorer*.

J. G. CAMPBELL

UNITED STATES

Dr. Rufus Cole, director of the Hospital of the Rockefeller Institute for Medical Research, has been appointed to membership on the New York Commission on Ventilation. In announcing the appointment, Dr. C. E. A. Winslow, professor of public health, Yale University, chairman of the Commission, states that Dr. Cole's advice on matters regarding the diagnosis of respiratory illnesses will be extremely helpful in research projects in ventilation which this body is conducting.

It will be recalled that from 1913 to 1917 the New York State Commission on Ventilation to which this commission is the successor carried on intensive laboratory investigations and studies in ventilation in some of the public schools of New York City, and that it collected a volume of data which was published in 1923, (Dutton). The body was reorganized about a year ago in order that there might be some disinterested group of scientific standing to maintain a bureau of information and to conduct further investigations on the technical, legal, and economic aspects of the problems of school ventilation. The Milbank Memorial Fund, which provided the money for its initial work, is financing its present programme.

Other members of the Commission are Dr. Frederic S. Lee, research professor of physiology at the College of Physicians and Surgeons, New York; Dr. George T. Palmer, director of the division of research of the American Child Health Association; Dr. Earl B. Phelps, professor of sanitary science, College of Physicians and Surgeons; Dr. Edward Lee Thorndike, professor of educational psychology at Teachers College, Columbia University; and Mr. Dwight D. Kimball, consulting engineer, New York. Mr. Thomas J. Duffield is executive secretary of the Commission, whose office is located at 370 Seventh Avenue, New York City.

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MONTREAL -- CANADA

Book Reviews

Practical Pedodontia or Juvenile Operative Dentistry. Floyde Eddy Hogeboom, D.D.S. Second edition, 108 pages, illustrated. Price $3.50. C. V. Mosby Co., St. Louis, 1927.

This is a small book, well printed and profusely illustrated, written with a view to stimulating a greater zeal and enthusiasm for better methods of caring for the dental health of children. The author states that the book is an introductory text for students and practitioners of dentistry, but it should also appeal to the physician, who has the health of children as his aim, and is willing to co-operate with the dentist to realize this. The chapters on Embryology, The Development of the Child's Head, Nutrition, and Public Health and Dentistry, serve to emphasize the fact that the problems of the physician and dentist are closely related in dealing with children's health.

Preventive dentistry as the author defines it, "The minimizing of those adverse conditions of life, which tend to shorten the period of dental efficiency," necessitates the following out of a programme as outlined in the chapter on Public Health Dentistry. This programme demands that parents, teachers, boards of health and education, physicians and dentists, should all co-operate to secure proper treatment for the child early in life. That early treatment is necessary, is clearly shown by the fact that the children's teeth commence their development between the fiftieth and sixtieth day of embryonic life, and the first permanent molar about the fifteenth week. These facts show the importance of the physician's advice to secure the correct diet, fresh air, and hygienic habits for the mother, so that the growing child may develop sound teeth, and avoid many of the ills of child and adult life.

A book which clearly presents these facts deserves careful study by all physicians and dentists, as well as the practical application of such knowledge. Canadian practitioners, in the application of public dental health, will find useful material in the pamphlet of the Department of Health, Ottawa, "How to Build Sound Teeth," as well as the various publications of the Ontario Dental Service, Department of Health; and the Los Angeles County Health Department mentioned in the book.

From the dentists' viewpoint, the following criticisms appear justified. The first chapter on Embryology and the Development of the Child's Head, might profitably be condensed; a large part of this material is easily available in standard text-books. This would permit more space to be devoted to more detailed instruction in operative procedures and the management of the children. The illustrations of work on cavities could be shown more clearly if the seat of the cavity was shaded and the light directed from above.

The subject matter of the book is of great importance and well worthy the careful attention of physicians.

CAMPBELL MORRIS

The Fifteenth Annual Report of the Medical Department of the United Fruit Company, 1926.

This is a plain, straightforward, and well-produced account of the research work done in the many hospitals and dispensaries in the West Indies and Central America under the control of the United Fruit Company. Although it deals largely with tropical diseases and conditions, it has a special interest for us in Canada, inasmuch as the General Manager of the Medical Services of the company is Dr. W. E. Deeks, a Canadian, and a distinguished graduate of McGill University, both in Arts and Medicine. Dr. Deeks has spent most of his productive professional life in the neighbourhood of the Isthmus of Panama, and has rendered good service to science.

The United Fruit Company carries out an extensive and elaborate medical programme in the regions under its jurisdiction not only looking after the physical welfare of its ailing employees, but also, after the health of the crews and passengers on its ships, and supervising the establishment of measures necessary for the limitation and control of disease.

Some interesting facts may be culled from the pages of this valuable report. The most prevalent and most economically important of the endemic diseases met with is malaria. Its most frequent vector in the regions operated in by the company is the *Anopheles albimanus*. Much work has been done in elucidating the breeding conditions of this insect. Prof. Taliaferro and his associates report that they have had considerable success in developing a precipitin test for the detection of the malarial infection. The best antigen in their opinion is malarial protein derived from heavily infected placentæ. Briefly, the results obtained were as follows: The sera of 54 infected persons tested with this antigen gave a positive result in 45 cases; a doubtful positive in 2; and a negative in 7. Contrariwise, 32 showing a negative thick film for malaria gave a negative test in 25; a doubtful positive in 1; and a fully positive test in 6. All the data indicate that the precipitation is a specific antigen-antibody reaction.

In the matter of acute lobar pneumonia, the mortality rate is reported as exceedingly high among the native and coloured populations—about 36 per cent. Complications are frequent.

Considerable use was made of the antiseptic properties of mercurochrome. There is a consensus of opinion that in 2 to 4 per cent solutions, used locally, this drug is of much value in superficial and deep wounds, in superficial ulceration, and in suppurative otitis media with perforated drum. In the last mentioned condition its action is almost specific. In gonorrhœa, administered intravenously the remedy has little value, though, curiously, in the complications, arthritis, and epididymitis, the effect was sometimes spectacular. In malaria mercurochrome seemed to produce no good effect. In pneumonia it was a little more promising.

Much work was done on various flocculation tests for the diagnosis of syphilis; notably in comparisons of the Wassermann, Kahn, and Meinecke technique. The agreement between the complement fixation and flocculation tests was remarkably close. Between the Kahn and Meinecke tests, the latter seems to have the preference on account of its greater simplicity.

There is much interesting matter in relation to snake-bite.

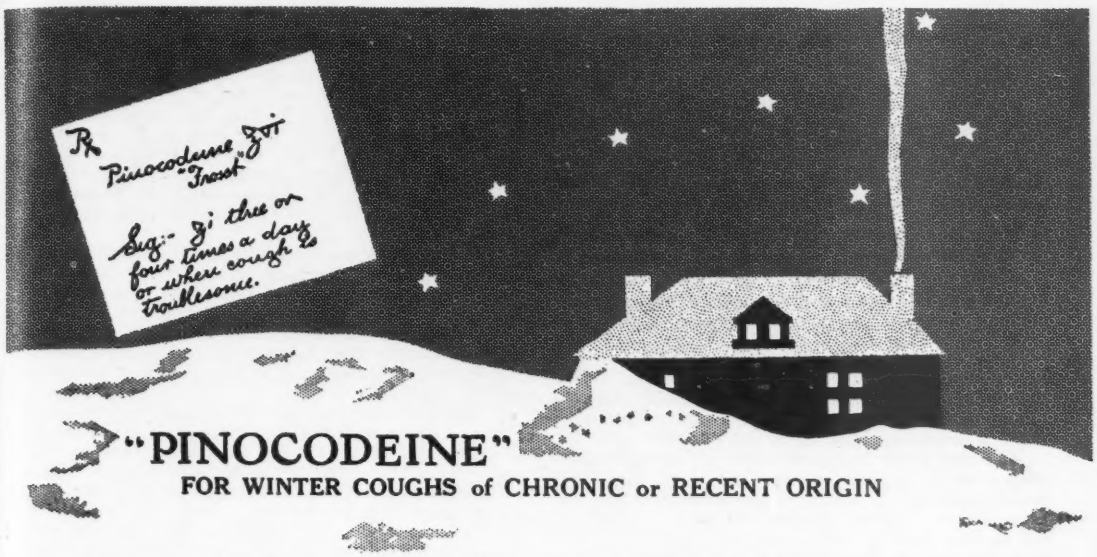
Altogether, the report represents much valuable work carried out under careful direction and will well repay perusal.

A. G. NICHOLLS

Anatomy. Fourth edition, part vi. Catechism series. 89 pages. Price 50c. Macmillan Co. of Canada, Toronto, 1927.

Physics. Third edition, part ii. Catechism series. 68 pages. Price 50c. Macmillan Co. of Canada, Toronto, 1927.

Little can be said of a catechism series if one admits the value in the principle of continual questioning. Both these are clear: they cannot of necessity be completely comprehensive.



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Genius. Some Revaluations. Arthur C. Jacobson. 160 pages. Price $2.50. Greenberg Publishers. 112 East 19th St., New York, 1926.

An attempt to trace the development of all geniuses from the generally abnormal elements of mankind, rather than from the well-bred, speaking from the eugenic point of view. When one has waded through these half-baked conclusions a mental refreshment may be recommended in the shape of Galton's "Hereditary Genius".

La Tuberculose Médicale de l'Enfance. Maurice Péhu et André Dufourt. 740 pages, avec figures dans le texte, 75 fr. Gaston Doin & Cie., Paris, 1927.

The authors of this carefully written treatise assign but little weight to the persistently recurring theory of hereditary tuberculosis. The place of this they think will eventually be settled by deciding whether or not there are filterable forms of the tubercle bacillus. In the meanwhile what we have to deal with in the vast proportion of cases is infection during life. This is so simple a proposition that many overlook it.

One fact which brings the study of tuberculosis in infancy within bounds is the absence of any other chronic condition at that age excepting syphilis. The distinguishing features between the two, however, as well as other limiting factors, are well marked. One of these features is that tuberculosis may exist in such complete latency from infancy till adult life. Some maintain that all adult tuberculosis begins in infancy: that it represents in the picturesque words of the authors "a song which the candidate for tuberculosis sings from the days of his cradle."

A considerable amount of space is devoted to some excellent radiograms. H. E. MacDermot

A Treatise on Pneumonic Plague. Wu Lien-Teh, M.A., M.D. Publications of the League of Nations.

This is an interesting and exhaustive monograph on a disease which is now fortunately rare among the western nations, but which as Dr. Wu Lien-Teh reminds us may break out in the tropics as well as in the cold regions. The book was written largely on account of his experience in the 1910 epidemic in Manchuria, but he goes far beyond this, and gives information dealing with the subject from every available source.

H. E. MacDermot

Noxious Gases and the Principles of Respiration Influencing their Action. Yandell Henderson and Howard W. Haggard. 220 pages illustrated. Price $4.50. American Chemical Society Monograph Series. The Chemical Catalog Company, New York, 1927.

During the past decade the American Chemical Society has attempted from time to time, to present valuable knowledge on divers subjects in monographic form. It has been their aim to make the reading of these books intelligible to those who may require the information, but who would not be sufficiently familiar with it because the greater part of their time must be devoted to some other, though allied, subject. "Noxious gases" is one of the latest of these publications. Had it been published anonymously it would hardly be necessary to comment upon its authoritative nature. The Board of Editors responsible for the critical analysis of these monographs prior to their publication is, by itself, an assurance of quality. The publications of the past and the names of their authors are proof of this.

This monograph deals with the noxious gases met with in industry. It is written for the "practical use and information of chemists, engineers and others engaged in industry". It has, however, a definite place in medicine as a knowledge of its contents enables a more clear understanding, and consequently more rational treatment, of many emergency conditions.

From the plan of presentation of the material, it is obvious that the writers are not only authorities but also teachers, which will be gratifying to the many readers. They assume that the reader knows practically nothing or very little of the subject. The work is introduced by a general, but brief, survey of the different gases and their hazards to workmen. Here will be found a very simple, but logical, classification based upon physiological action. Then follows a clear exposition of fundamentals of respiration which includes a description of the general structure of the lungs.

The next chapter deals with a more detailed study of the respiratory functions of the blood. The work done within recent years on this phase of respiration has been of far reaching importance and it may here be observed that the authors of this book were large original contributors. In spite of its advanced nature this chapter is conspicuous for simplicity of presentation.

The minimum of physics necessary for the intelligent study of respiratory phenomena is given in the next chapter. This includes the laws of gases. The essentials of the physiology of absorption, distribution and elimination of volatile substances, form the subject matter which follows. One mathematically inclined and with a knowledge of the calculus, will recognize the possibilities of quantitative work along these lines. In this chapter will also be found a very useful table of the different gases. For each gas is given the chemical formula, physical state under ordinary conditions (solid, liquid, or gas) the boiling point and physiological action.

The chapters following are devoted to more detailed considerations of the pharmacological effects of the different gases and treatment. In a few pages, and in a very simple manner, the phenomenon of anoxæmia is explained. Because of the frequency of accidents, relatively, much space is devoted to carbon monoxide poisoning. The discussion is very clear and of very practical importanec. The same may be said of other gases commonly met with in industry.

The last chapter deals with the prevention and treatment of acute poisoning. In this will be found descriptions of the different types of protective apparatus. The treatment of acute poisoning is very clearly outlined and a rather important phase of the subject is discussed at length, namely, harmful practices during emergency conditions; in other words, what NOT to do with the victim of gas poisoning. "Manual punishment is not resuscitation".

Though the literature on the subject is voluminous the references given in this monograph are relatively few in number and here again the work conforms to the general policy of the Board of Editors, namely, the critical selection of those papers which are most important. From the practical point of view, the work is complete. For the purpose it is meant to serve, it appears to be the first of its kind, and should be a valuable addition to the medical library. It will be found particularly useful to those engaged in industrial medicine.

May the reviewer respectfully point out an æsthetic blemish? Throughout the pages one finds "through" and "throughout" replaced by "thru" and thruout" and "sulphur" by "sulfur".

I. M. Rabinowitch

The Canadian Mother's Book. Helen MacMurchy, M.D. 163 pages, illustrated. Department of Health, Ottawa, 1927.

This Confederation Diamond Jubilee edition of the first of the Mother's Series of the Little Blue Books is a very practical volume, clearly written, and contains all the information which the expectant mother should know in reference to herself and the baby. It contains eight chapters: on the Baby's Coming, Nursing the Baby, Things that the Mother and Baby

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need, Maternal Nursing and Care, The Baby Grows, The Baby's Habits, Health and Nutrition, and The Baby's Character and Disposition. It is written by Dr. Helen MacMurchy, Chief of the Division of Child Welfare, and it is with much pleasure that we note that it has reached its sixth 100,000. We have read the book carefully, and can strongly recommend every page in it. We congratulate the Government of Canada on its publication, and we can strongly recommend the book to every family in our Dominion.

A. D. BLACKADER

Tuberculosis and Infantile Mortality. A Course of Lectures Delivered by Prof. E. Sergent with the Collaboration of Dr. F. Bordet and Dr. Ribadeau-Dumas before Laval University and the University of Montreal, September, 1924.

The lectures occupy 400 printed pages in French and the authors are to be congratulated on the synoptic review they have given of all aspects of tuberculosis and the logical sequence chosen for the development of their theme.

The first lecture deals with the basic principles underlying the campaign against tuberculosis. The organization, as used in France, is described in detail and a plea is made for the compulsory notification of tuberculosis, even anonymously, since, like any other contagious disease, it is avoidable. The prophylactic measures fall naturally into two divisions, namely, individual education with social action, and the stand of the public authorities. The clinical course of tuberculosis is treated in the second lecture, then the classifications of the adult human forms, both the French and German conceptions, are dealt with in the third. The fourth lecture is given over to diagnosis, clinical and laboratory, and the fifth, sixth and seventh, to the positive, presumptive, functional, general and localized signs of tuberculosis. In the eighth, x-ray signs are considered, while the ninth and tenth take up the question of prognosis and therapy.

In a separate section Dr. Bordet gives a more detailed account of the laboratory methods of diagnosis, including the examination of sputum, animal inoculation, culture, complement-fixation, etc. He also deals with artificial pneumothorax and the injection of lipiodol. A more controversial subject, however, is the question of the combination syphilis and tuberculosis. This is a subject in which many of the French school are greatly interested, but it seems to the reviewer that no definite proof of the occurrence of such a double infection has been presented. Thus, the mere finding of spirochætes in the lung tissue is not sufficient evidence unless one is certain they are morphologically similar to *Spirochæta pallida* and produce the pathognomonic lesions in rabbits. In like manner a beneficial reaction to specific treatment is but presumptive evidence, seeing that the various spirochætal forms of the mouth (*Spirochæta* of Vincent, *buccalis*, *macrodentia*, *microdentia*, etc.) are known to be associated with various diseases of the lungs, and in some cases these patients react to specific treatment.

The final chapters, by Dr. L. Ribadeau-Dumas, are devoted to the question of "Infantile Mortality."

This collection of lectures appears to be particularly useful to anyone teaching who is called upon to give a full course on this disease in all its various aspects.

ARNOLD BRANCH

Bone Sarcoma: The Primary Malignant Tumours of Bone and the Giant Cell Tumour. Anatole Kolodny, Ph.D., M.D., Department of Surgery, State University of Iowa. 214 pages, illustrated. The Surgical Publishing Company of Chicago, 1927.

The medical profession owes a great debt of gratitude to the author of this beautifully printed book on the material that has been collected by the Registry of Bone Sarcoma of the American College of Surgeons. The collection of the records and reports of 700 cases would fail in its objective were the lessons to be learned from their study not made accessible to the profession.

The author has been successful in his attempt "to assemble, analyze, and critically present before the profession at large the multitude of facts and information gained from a personal study of the 700 cases of the Registry and an extensive review of the literature to date." After a brief introduction and historical description, the etiology of tumours and more especially bone sarcoma is discussed. In estimating the relation of trauma to bone sarcoma, he argues that normally "growth tendency" ceases when adult age is reached on account of its being interfered with by "growth restraint"; that repair occurs following trauma by a temporary change from a potential growth ability to a kinetic, *i.e.*, "it leads to a temporary elimination of 'growth restraint' in the traumatic area." Whether such a hypothesis could be accepted is open to question in our present state of knowledge of the metabolism of the various tissue cells of the body. Although growth of bones may cease when adult age is reached, both bone and other tissues continue to undergo anabolic and katabolic changes so long as life exists in the host, and many arguments might be presented indicating the effects of trauma in stimulating or destroying these metabolic processes. One is inclined to consider that the author has merely added another to "the many hypotheses of purely philosophical nature, which lack actual basis," and which, he states, he will refrain from discussing.

The simplification which he has suggested in the Registry Classification should meet with hearty approval, as it will be more readily understood by the practitioner. Ewing's sarcoma seems a far more intelligible term than Ewing's tumour. The chapter on diagnosis is sound and conservative, suggesting that a decision can only be well-balanced after a study of the clinical, pathological, and roentgenographical factors. His warning with regard to mistakes in technique, and the interpretation of films, is timely. After a review of the various recognized methods of treatment in use, his conclusion is that there is no generally accepted routine solution of the problem of osteogenic sarcoma.

Nothing but the highest praise is due the author for the excellence of the illustrations and the technique in their publication. The ease of reference to the illustrations might be increased by consecutive numbering instead of the double system of plates and figures.

This volume should prove a valuable addition to medical literature and should find a place on the shelves of the libraries of all medical organizations as well as of many others who devote their practice more especially to surgery.

E. STANLEY RYERSON

A Text-Book of Medicine. By American Authors. Edited by Russell L. Cecil, A.B., M.D., Assistant Professor of Clinical Medicine in Cornell University. Large octavo. Pages xxii-1500. Price $10.00. W. B. Saunders & Co., Philadelphia and London. McAinsh & Co., Toronto, 1927.

The editor, believing that it is almost impossible for any one man to master the whole field of internal medicine, presents a text-book in which each disease is discussed by a writer particularly interested in that subject. There are 130 contributors, most of whom are teachers in the medical schools of the United States and Canada.

The diseases are grouped under infections, those due to allergy, physical agents, chemical agents, the intoxications, deficiency diseases, diseases of metabolism and of the various systems and ductless glands. At the close of each contribution is a short bibliography of the more important references.

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books of medicine but we shall not discuss whether there is need for another. This one, excellent in its conception, will find friends. With such an array of contributors, the author has been most successful in keeping a proper balance in form and in the proportionate length of the articles descriptive of the long list of diseases under discussion. The general style of presentation does not differ materially from that in standard text-books. Yet as each disease or group is treated by a specialist the subject matter is right up to date and includes the work of recent reseaches in pathology and in practice. The editor is to be congratulated in securing such uniformity from his contributors.

J. H. ELLIOTT

A Manual of General Medical Practice. W. Stanley Sykes, M.A., M.B., B.Ch. Pages xii-216, 8vo. Price 7/6 net. H. K. Lewis & Company, Ltd., London, 1927.

Dr. Sykes has written a manual for the student and young practitioner in which he presents in most readable form and in small space lessons of value which he has gathered in his years of practice. This manual of practice is filled with instruction in both the art and science of medicine as applied in general practice. Many of the diseases met with in general practice are dealt with in a practical way both in diagnosis and treatment. There are chapters on dispensing and drugs, bookkeeping and records, instruments and equipment, contents of the midwifery bag, and particularly valuable chapters on anæsthesia. A book of this type should be in the hands of every young student, while any physician may read it with pleasure and profit.

J. H. ELLIOTT

Physical Diagnosis. Richard C. Cabot, M.D., Professor of Medicine in Harvard University. 9th Edition, revised and enlarged. Pages xxi-536, 6 plates and 279 figures in text. Price $5.00 net. William Wood & Co., New York, 1927.

Slight changes in a few paragraphs form the only deviations from the eighth edition reviewed in this *Journal*, January, 1924. There is no change in the table of contents, pagination, or index. Indeed all the errors found in the previous index still appear in this slightly altered reprint called a new edition. No attempt has been made to correct them.

For the text we have only kind words, it is well arranged, well illustrated, and is a most helpful guide to the student and physician in the art of diagnosis.

J. H. ELLIOTT

Mental Handicaps in Golf. Theo. B. Hyslop, M.D., F.R.S.E. 108 pages. Price $1.50. Williams & Wilkins Co., Baltimore, 1927.

This small 12-mo. volume of a size to slip easily into the coat pocket, and dedicated to his fellow sufferers of the Medical Golfing Society, is very interesting, very readable, and withal contains much good advice. The editor, Dr. T. B. Hyslop, a member of the Medical Golfing Society of London, and Senior Physician to Bethlem Royal Hospital, writes delightfully on the Royal Game of golf from the view-point both of its physical features and its mental features, and prescribes as the best formula for PAR golf, Practice, Automatism, and Reason, devoid of temperamental and all other mental divergences. In his introduction he states that although to members of the golfing *profession* golf in many instances means a struggle for existence, to the amateur the sense of enjoyment is retainable so long as the efforts themselves are not marred by mental irritations. Lord Balfour, as quoted by him, regards golf as the true and adequate end of man's existence; while Begbie and Taylor agree that golf has moral and political implications of a high order, and that its study is not beneath the serious notice of all those whose affections are set upon the higher interests of man's soul. While several of our medical confrères have sought to confer relief on suffering humanity by discussions on the physics of the flight of the ball, and the physiology of the mechanism of golf, no one thus far has considered its psychology, which constitutes 90 per cent of the factors which lead to efficiency. This phase of golf Dr. Hyslop has attempted to describe in his small volume which contains chapters on the prodromata, diatheses, mental stances, stigmata of degeneration , time reactions, mental affections, psycho-therapy of all faulty conditions of golf and golfers and ends with a chapter on anecdotage.

We heartily commend the book to all our confrères and would advise them to read carefully and thoughtfully the chapter on Stigmata of Degeneration before entering upon the links.

A. D. BLACKADER

Food Values. Louise M. Keegan. 106 pages. Price $1.75. The Macmillan Co. of Canada, Toronto, 1926.

This small volume of about 100 pages presents in a systematic form tables of food values, and data on which the calculation of diabetic and nephritic diets may be readily calculated. The facts are well presented; and to make the figures given of more ready reckoning only integral numbers have been given. The book may be recommended not only to nurses and dietitians but to teachers of home economics in universities and colleges. At the end of the book directions are given for testing the amount of glucose in urine, and full directions for diet in cases of nephritis.

A. D. BLACKADER

Manual of the Diseases of the Eye. Charles H. May, M.D. Twelfth Edition, revised. 445 pages, 374 illustrations, with plates and coloured figures. Price $4.00. William Wood and Company, New York, 1927.

The demand for another edition of this standard text-book is proof of its undiminished and well-deserved popularity.

The work is written for the requirements of the student and general practictioner and well fulfills its purpose. The subject is presented in a style which enables one to obtain a large amount of information in a short space of time and gives a good general survey of the field of ophthalmology.

COLIN GRAHAM